SEPTEMBER
1953

DIGEST

U. S. CUSTOMS regulations have been eased by a new bill, but some of the biggest traps are still intact . . . p13

DE GASPERI of Italy saw his country through troubled years and daily crises. Much was accomplished, much left unfinished p15

PLASTICS are an industrial miracle, but don't expect them to do the impossible. Be sure you have the right one for the right job p22

SLIDABRADING, new tumbling process, can put a slick finish on steel, copper, light or heavy parts p27

BRISK DEMAND for metals should keep mine operators smiling. New metals will fill special needs p34

DIESEL locomotive makers are turning out trim new engines for foreign roads. Besides good looks, they are thriftier than steam—by 75% p40

Pressure Processing

. . . whoever uses it in their production is a customer or potential customer of **H-P-M**

Rugged Construction of CATERPILLAR Equipment Calls for Versatile, Dependable H-P-Ms!

Production men at Caterpillar Tractor Company find versatile H-P-M All-Hydraulic presses perform a wide variety of jobs in building Caterpillar's extensive line of tractors, engines, motor graders and rugged earth-moving equipment. There are 6 H-P-Ms in this diversified production line, ranging in size from 500 to 3500 tons . . . and, one press may do work on as many as 15 or 20 different parts.

If pressure processing plays a part in your production, it will pay you well to talk shop with an H-P-M engineer. Write today!

HPM

THE HYDRAULIC PRESS MFG. CO.

1086 Marion Road, Mount Gilead, Ohio, U. S. A.

Presses for Every Pressure Processing Application

A new era of tractor usefulness . . .

Allis-Chalmers HD-20G Tractor Shovel

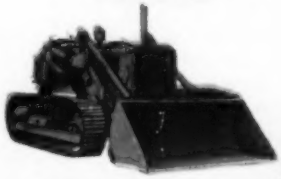
The photograph above shows the Allis-Chalmers HD-20G Tractor Shovel — the world's largest — removing rocky soil on a highway grading project.

New methods of speeding construction work and doing it more economically are possible with this big tractor shovel. It broadens the scope of tractor usefulness. Equipped with bulldozer blade and a choice of standard bucket, heavy-duty rock bucket, or light materials bucket (capacity 7 cu. yd. or 5.35 m^3), the HD-20G handles a great variety of excavating, grading, loading and bulldozing tasks.

Its hydraulic torque converter drive assures operating ease and dependability . . . gives the operator the equivalent of hundreds of gear ratios in two speed ranges . . . automatically selects the proper speed for maximum production.

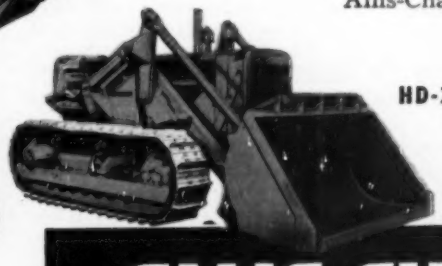
There is a size of tractor shovel to fit your need. For further information, consult the Allis-Chalmers distributor in your area.

HD-5G 40 hp.
Total Weight 16,200 lb. (7,348 kg.) 1 cu. yd. (0.76 m^3) bucket*



HD-9G 72 hp.
Total Weight 29,900 lb. (13,562 kg.) 2 cu. yd. (1.53 m^3) bucket*

HD-15G 109 hp.
Total Weight 44,400 lb. (18,144 kg.) 3 cu. yd. (2.29 m^3) bucket*



HD-20G 175 hp. (net)
Total Weight 61,600 lb. (27,941 kg.)
Hydraulic torque converter drive.
4 cu. yd. (3.06 m^3) bucket*

*Standard bucket

ALLIS-CHALMERS

DEPT. MH953 — TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

BUILDERS OF MACHINERY SINCE 1847

Link-Belt Research and Engineering . . . Working for Industry

How to turn a city's sewage into fertilizer, fuel and clean water!

1 Discharge from aeration tanks plus activated sludge flows into final settling tanks.
2 Clear effluent flows to a surge chamber on its way to the ocean.
3 As solids settle to tank bottom, slow-traveling conveyor flights move them gently to one end.
4 Solids are carried away by Link-Belt Straightline Cross Collectors.

New Los Angeles Sewage treatment plant uses 100 LINK-BELT Straightline Sludge Collectors

FOR 10 years, the city of Los Angeles had 12 miles of beach quarantined. Then they decided to do something about it. They eliminated the source of pollution with the opening of the Hyperion activated sludge plant. Covering 75 acres, this modern plant is designed to serve 3,000,000 people.

Not only can Los Angeles now use its beaches, but the sludge gathered by the Link-Belt Straightline Collectors is converted into fertilizer. Gas, generated in the digestion tanks, fuels the power house. And the clarified water, now piped safely into the ocean a mile off shore, can some day be used for irrigation.

In hundreds of cities, large and small, Link-Belt equipment is used for the purification of water supply as well as for sewage treatment. And industry relies more and more on this equipment for salvaging valuable solids from waste . . . simultaneously preventing pollution of lakes and rivers.

Helping guard the nation's health is just one result of continuous Link-Belt research and engineering. In almost every industry, you'll find Link-Belt conveying, processing and power transmission machinery speeding production, cutting costs, making America better through greater productivity.

Storm peaks of 420,000,000 gallons per day can be treated at the $41,000,000 Hyperion plant. Photo and schematic drawing show Link-Belt Straightline Collectors of which there are 100 in the final settling tanks. Plant designed under direction of Lloyd Aldrich, City Engineer, and Metcalf and Eddy of Boston.

LINK-BELT COMPANY

Engineers • Manufacturers • Exporters of Machinery for Conveying Materials and Transmitting Power. Established 1875.

EXPORT DIVISION

2680 Woolworth Bldg., New York 7, U.S.A. • Cable Address: Linkbelt—New York.
Representatives listed on opposite page. 13,080-A

LINK-BELT

ONE SOURCE . . . ONE RESPONSIBILITY FOR CONVEYING, PROCESSING AND POWER TRANSMISSION MACHINERY

LINK-BELT

Representatives Throughout the World

Argentina—General Electric S.A., Buenos Aires and Rosario
Australia—Link-Belt Company Pty. Ltd., Sydney • Malleable Castings Pty. Limited, Marrickville
Belgium, Luxemburg & Belgian Congo—Fabricom, S.A., Brussels
Brazil—Cia. Importadora de Maquinas "Comac," Rio de Janeiro, Sao Paulo and Belo Horizonte • Figueras S/A Engenheiros & Importadores, Porto Alegre, Pelotas, Florianopolis and Cachoeira do Sul • Oscar Amorim, Comercio S/A., Recife and Natal
British Guiana—J. N. Harriman & Co., Ltd., Port-of-Spain, Trinidad, B.W.I.
Canada—Link-Belt Limited, Scarboro, Toronto, Montreal, Vancouver, Winnipeg, Swastika, Hamilton, Elmira, Halifax, Sydney
Canal Zone—Agencias Lumina, S.A., Panama
Chile—Gildemeister, S.A.C., Santiago, Coquimbo, Ovalle, Valparaiso, Concepcion, Victoria, Temuco, Valdivia, Rio Bueno, Osorno, Puerto Varas, Puerto Montt, Punta Arenas
China, Taiwan & Hong Kong—Li Ya Industrial Development Corp. (H.K.) Ltd., Hong Kong
Colombia—Tecnica Colombiana S.A., Bogota • Tecnica Medellin, Ltda., Medellin • Tecnica de Cali, Ltda., Cali • Tecnica Manizales, Ltda., Manizales • Tecnica Barranquilla, Ltda., Barranquilla • Tecnica Bucaramanga, Ltda., Bucaramanga
Costa Rica—Grace & Co., C.A., San Jose
Cuba—Woodward, Gilbert & Cia., Havana
Denmark—Hakon Gertsen, Copenhagen K
Dominican Republic and Haiti—F. A. Ortiz & Co., Inc., San Juan 5, Puerto Rico
Ecuador—Ferrum, S.A., Guayaquil & Quito
El Salvador—Grace & Co., San Salvador
England—Watveare Overseas, Ltd., Devonshire (Agricultural Chains only)
Finland—Industria Osakeyhtio, Helsingfors
France—C. Comiot, Paris
Greece—Hellenic Tech. Supply Co., Athens
Guadeloupe, F.W.I.—Pierre Langlois Corp., Pointe-A-Pitre
Guatemala—Grace & Co., C.A., Guatemala
Hawaii—Honolulu Iron Works Co., Honolulu; Hilo Iron Works, Hilo
Iceland—Velsmidjan Hedinn Ltd., Reykjavik
India—Kilburn & Co. Ltd., Calcutta, Bombay, New Delhi, Madras, Kanpur, Ahmedabad
Israel—Manfred Gottesmann, Tel Aviv
Italy—Trione Ricambi, S.p.A., Turin, Milan and Rome
Jamaica—Reginald Aitken Ltd., Kingston
Malaya—United Engineers, Ltd., Ipoh, Kuala Lumpur, Malacca, Seremban, Penang
Martinique—Maurice Hayot & Cie., Fort-de-France
Mexico—The General Supply Co. S.A., Mexico, D.F. • Gustavo Rodriguez, Monterrey, N.L.
Morocco, French & Tangier Zone—S.E.R.I.M.A., Casablanca, French Morocco
Netherlands—J. H. Kimman's Technische Handelmaatschappij, N. V., Rotterdam
New Zealand, Western Samoa, Fiji, and Tonga—Dominion Sales Corp. Ltd., Auckland, Wellington, Christchurch, Dunedin • Fletcher Holdings Limited, Auckland
Nicaragua—Grace & Co., C.A., Managua
Norway—Welhaven & Co., A/S., Oslo
Pakistan—Kilburn & Co. (Pakistan) Ltd., Karachi, Lahore and Chittagong
Panama—Agencias Lumina S.A., Panama
Paraguay—Sociedad Anonima Comercial Manuel Ferreira, Asuncion
Peru—Gross Equipment S.A., Lima, Arequipa, Chiclayo, Ica
Philippine Islands—The Earnshaws Docks & Honolulu Iron Works, Manila, Bacolod and Cebu
Portugal, Angola, Azores and Madeira Islands—Alfredo Alves & Ca. (Filhos), Lisbon and Oporto, Portugal
Puerto Rico and Virgin Islands—F. A. Ortiz & Co., Inc., San Juan 5, Puerto Rico
Singapore—United Engineers Ltd., Singapore
Spain, Canary & Balearic Islands, Spanish Morocco and Spanish Possessions in Africa—Kynos, S.A., Madrid, Spain
Surinam—N. V. Ingenieursbureau H. N. Van Dijk, Paramaribo and New Nickerie
Sweden—Aktiebolaget Fr. Ramstrom, Harnosand and Stockholm
Switzerland—Wilhelm Pluess, Zurich 1
Thailand (Siam)—International Engineering Co. Ltd., Bangkok
Trinidad, British Guiana, Barbados, Antigua, St. Kitts, Grenada, St. Vincent, St. Lucia, Tobago—J. N. Harriman & Co. Ltd., Port-of-Spain, Trinidad, B.W.I.
Union of South Africa, Southwest Africa, Northern Rhodesia, Southern Rhodesia, and Mozambique—Link-Belt Africa Limited, Springs, Transvaal • Edward L. Bateman Ltd., Johannesburg, Durban and Bulawayo, S. R.
Uruguay—General Electric S.A., Montevideo
Venezuela—Ortiz & Mejia C.A., Caracas

McGRAW-HILL DIGEST

. . . the best from 48 business magazines—see p52

Volume 8 | September 1953 | Number 9

FEATURES

It's Easier to Export to the U. S. 13
Italy — Country of Struggle 15
The Right Industrial Plastic 22
Fine-Finish Tumbling 27
Natural Gas to Ethylene 29
Coffee, Key to Economy? 31
Mining's Future: It's Bright 34
Dairy Products Improve 37
New Design Technique 38
Diesels for World Railroads 40

AVIATION, TRANSPORTATION
Primes Automobile Bodies 19
More Autos Steer with Power 31
Beacon Saves Crash Victims 33

CHEMISTRY, METALLURGY
Reduces Ore with Wood 19
Oil-Shale Chemicals 33
New Newsprint Process 41

CONSTRUCTION
Splices Hard-to-Splice Bars 25
Unique Cantilevers for Hangar 36
Columns Bear on Floor Insulation 41

ELECTRICITY, POWER
Plant Operates at 4,500 Psi. 30
Glass-Lined Stack 33
Filters Compressed Air 46

ELECTRONICS
Makes Solderless Connections 19
Infrared Soldering 33
Blocking Oscillator 43

FOOD PROCESSING
Makes Better Pigs 19
New Foods from India 25
Farm-Product Research 30

METALWORKING
Rolls Burr Edges 29
Flat Stock Flanged 30
Metalworking Shorts 41

MINING, PETROLEUM
Travels Both Land and Water 21
Foam Cuts Evaporation 25
For Deep-Hole Drilling 43

PLANT MANAGEMENT
Save Time at the Stock Room 21
Means More New Products 30
Ends Plant's Floor Troubles 36

TEXTILES
Measures Fiber Characteristics 14
When You Try Textile Fungicides 29
Makes Loomfixers Out of Novices 37

DEPARTMENTS

Business Trends 7
Washington Report 9
This Month's How To 21
Technical Shorts 33
New Products 42
Management Report 49
Production Ideas 49

Harry S. Wharen, *Editor*
Joseph A. Cohn, *Assistant Editor*
Arthur R. Poutray, *Assistant Editor*
W. Howe Sadler, *Publications Manager*
Walter H. Diamond, *Trends' Editor*
J. K. Van Denburg, Jr., *Editor, World News*
George B. Bryant, Jr., *Washington Bureau*
Boyd France, *Washington Bureau*

September 1953 | McGRAW-HILL DIGEST | Vol. 8—No. 9

Member – Audit Bureau of Circulations

Published monthly by McGraw-Hill International Corporation for circulation in all countries of the world except the United States and Canada. *Publication office:* 99-129 North Broadway, Albany 1, N. Y., U. S. A. *Executive and editorial offices:* 330 West 42nd St., New York 36, N. Y., U. S. A. Curtis W. McGraw, Chairman of the Board; Willard T. Chevalier, President; Eugene F. Warner, Senior Vice-President; Joseph A. Gerardi, Treasurer; John C. Cooke, Secretary; J. C. Stark, Vice-President Publications Division; K. Presbrey Bliss, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Director of Circulation.

Subscriptions may be ordered through Director of Circulation, through local book dealer, or McGraw-Hill Publishing Co. Ltd., McGraw-Hill House, 95 Farringdon St., London, E. C. 4 (British only). Subscription rates: $5 for 1 year, $8 for 2 years, or $10 for 3 years; single copy 50¢ (U. S. currency). Entered as second-class matter January 1, 1953, at the post office at Albany, N. Y., under the Act of March 3, 1879.

Copyright, 1953 by McGraw-Hill International Corporation, 330 West 42nd Street, New York 36, New York. Reproduction of items in full or part without written permission prohibited in all parts of the world.

In any language...

"BLAW-KNOX"

MEANS ENGINEERING

EXECUTIVES responsible for the progress and success of many basic industries throughout the world look to Blaw-Knox for *excellence of engineering and quality of product.*

In the construction field, in steel and non-ferrous metals production, chemicals, food, transportation, communications and public utilities, Blaw-Knox has contributed machines, equipment and *ideas* unavailable elsewhere. All Blaw-Knox divisions are staffed by technicians whose engineering skills run the gamut of the profession, and their productive abilities are recognized around the globe . . . Perhaps our unique organization can be of immediate service to you and your associates.

BLAW-KNOX *Company*

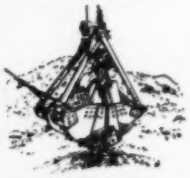
PITTSBURGH, PENNSYLVANIA, U.S.A.

ADDRESS...EXPORT DEPARTMENT

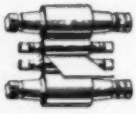
SECTION 2028, CHRYSLER BUILDING, 405 LEXINGTON AVENUE
New York 17, N.Y.

Cable Address: Blaw-Knox, N.Y.

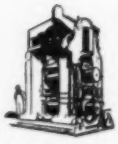
TRUCKMIXERS AND AGITATORS



CLAMSHELL AND CONCRETE BUCKETS



ROLLS



ROLLING MILLS

POWER PIPING

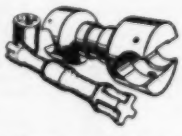
BATCHING PLANTS FOR PAVING

FORMS FOR TUNNELS, DAMS, WALLS, etc.

FAT-SPLITTING PLANTS

OPEN STEEL FLOORING

AUTOCLAVES



UNIVERSAL COUPLINGS AND SPINDLES

TV TOWERS

Get Accounting Reports Out Earlier With ANTARA

...Avoid Mistakes and Save Money Too!

"ANTARA COPIES ARE READY DAYS EARLIER!"

You can make an Antara copy of an accounting report in seconds—or hundreds of copies of one or many different reports per hour—from original data entered on ordinary translucent paper! Copies are ready for immediate distribution!

"ANTARA COPIES ARE ALWAYS ACCURATE!"

There's no retyping or re-writing—no chance here for errors to creep in and spoil your work—no smudgy copies with illegible figures!

"ANTARA COPIES ARE SO ECONOMICAL!"

You save real money in clerical costs by eliminating re-typing, proofreading and collating. Letter-size Antara copies average less than 1½¢ each!

Cumulative reports are easy to prepare with Antara. Simply write in up-to-date figures as they become available, and make Antara copies when wanted—at any stage of report! Your latest accounting reports are a *complete record,* showing all earlier figures, without posting any previously posted data.

Send for full details, or call the Antara distributor listed in the classified section of your phone book under Duplicating Equipment and Supplies.

ANTARA, Dept. MH-16
General Aniline & Film Corporation
Johnson City, N. Y.

Gentlemen: Please send me full information about your Antara O-M machine.

Name .....

Company .....

Position .....

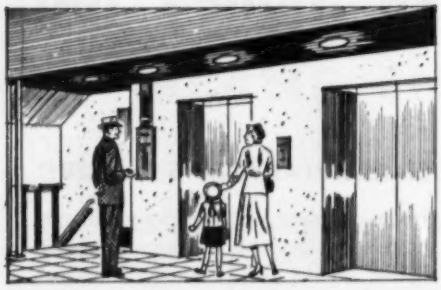
City .....

Check the application of greatest interest:
☐ General ☐ Order handling ☐ Accounting

Cut Copying Costs . . . use "ANTARA"*

Manufactured by General Aniline and Film Corporation, Johnson City, N. Y.
*Sold under the trademark OZALID in the U.S.A.

REPUBLIC *Enduro*® TYPE 430 STAINLESS STEEL



Type 430 ENDURO has stood up well in architectural applications such as elevator doors, stair rails, decorative panels, other uses.

Much kitchen and food serving equipment made of Type 430 ENDURO Stainless Steel 25 years ago still is in good condition.

Large tonnages of Type 430 ENDURO have been used for kitchen utensils of all types—commercial and domestic.

Republic ENDURO Type 430 Stainless Steel has been in continuous and successful use for more than 25 years in a broad variety of applications. In fact, the first stainless steels commercially produced were of this type.

Now Republic—world leader in the production of alloy, stainless and heat-resisting steels—has developed further refinements and modifications of Type 430 ENDURO. From the standpoint of fabrication and corrosion-resistance, it is very suitable for many varied applications in which stainless steel qualities are desired.

Its corrosion-resistance is exceptionally good. It offers high resistance to scaling and oxidation at elevated temperatures. It can be welded by most usual methods. It can readily be buffed and polished. It is easy to clean and to keep clean.

Today, Type 430 ENDURO, or some modification thereof, can be *your* most practical solution to problems created by necessary restrictions on nickel.

KNOWN THE WORLD OVER FOR QUALITY STEELS

Republic Steel Corporation

Export Department

Chrysler Building • New York 17, N. Y., U. S. A.

Cable Address: "TONCAN" • General Offices: Cleveland 1, Ohio

REPUBLIC STEEL PRODUCTS include: Alloy, Carbon and Enduro* Stainless Steels; Rust-resisting Toncan* Iron; Cold Finished Steels; Bars, Shapes, Sheets, Strip, Steel Roofing and Siding, Electrical Steels, Electro-Plated Sheets; Merchant Pipe, Line Pipe, Casing and Tubing for the gas and oil industry; Boiler and Heat Exchanger Tubes, Mechanical Tubing, Conduit; Tin Plate, Terne Plate; Bolts, Nuts, and Rivets; Wire Rods, Wire, Nails and Staples, Fence and Fence Posts; Drainage Products; Steel Building Products; Fabricated Steel Products—Shelving, Steel Cabinets for Kitchens, Storage Bins, Office Furniture, Lockers, Steel Containers. *Reg. U. S. Pat. Off.

REPRESENTATIVES IN PRINCIPAL CITIES OF THE WORLD

BUSINESS TRENDS

IMPORTERS AND CONSUMERS abroad should be on the lookout for U. S. products counterfeited overseas. Here is how to protect yourself against misbranded items:

Deal directly, if possible, with U. S. companies or their authorized distributors. Be sure you have some background on your local distributor. Investigate his reputation, as well as that of the exporter. Check all labels carefully. Test sample merchandise for inferior quality and workmanship of material. Request local authorities to guard against offenders.

Hong Kong is the fountainhead of counterfeiting today. But illegal operations also exist in quantity throughout the Far East, Middle East, Europe, and Latin America. Specific nations where trademark infringements occur are Ceylon, China, India, Indonesia, Japan, Korea, Germany, Italy, Spain, Turkey, Aden, Lebanon, Argentina, Brazil, and Nicaragua.

Arrow and Manhattan men's shirts are the most common items imitated. Their substitutes from Hong Kong are flooding world markets. Colgate-Palmolive's tooth paste and Vick Chemical inhalator tubes are ingeniously refilled, especially in Italy.

Turkey is a haven for counterfeiters of Northam Warren's Cutex nail polish. Among other leading companies confronted with fraudulent products are Parker Pen, Electric Auto-Lite, and Union Carbide & Carbon. The latter has several lawsuits pending on fake batteries and bulbs.

Foreign governments will soon be urged to help eliminate spurious operators. The U. S. Commerce Department plans to establish an international agency to check the growing problem. Effective organizations, such as the "All India Association", will be formed in several countries to combat counterfeiters.

PRESIDENT EISENHOWER'S answer to one of America's major domestic problems—surplus farm produce— is making only limited headway. He has been given power to dispose of millions of tons of excess produce. So-called "needy" countries will receive $100-million worth of surplus food to aid starving people. Other areas are able to buy at a small cost.

"**Conversion agreements**" with nations purchasing U. S. crops also have been proposed. Under the plan, foreign governments would pay this country with local exchange instead of dollars. The U. S. would spend these foreign currencies for offshore procurement contracts.

Food-producing countries are wary. These include Canada, New Zealand, Australia, Argentina, Netherlands, and Canada. They feel American policy will disrupt the world market. Several food-importing nations also are unhappy as they prefer to see their domestic farming expand.

U. S. SHIPPING INDUSTRY will be strengthened as a result of recent Congressional hearings. The construction of nearly 200 vessels will be geared to the preservation of America's shipyard skills over the next few years. About 500 Liberty ships in the present "mothball fleet" of 1,857 will be permanently scuttled. Many will be replaced with more efficient cargo carriers.

The administration plans a drive to attract more private capital, particularly for passenger liners. Not one passenger vessel is being built in the U. S. for private U. S. operation.

But U. S. investment is a primary source for new construction at shipyards in England, on the Continent, and in Japan. In the past year, overseas builders received contracts from this country for 40 vessels of over 1-million tons.

Other plans are to return foreign flagships owned by American companies to U. S. command, to charter privately-owned new ships on a long-term basis, and to help the industry with accelerated depreciation and favorable rates.

CONVERTIBILITY is making real progress in Western Europe. First worthwhile step is the success enjoyed by commercial banks in England, Belgium, France, Holland, Denmark, Sweden, Switzerland, and Germany in trading foreign currencies freely.

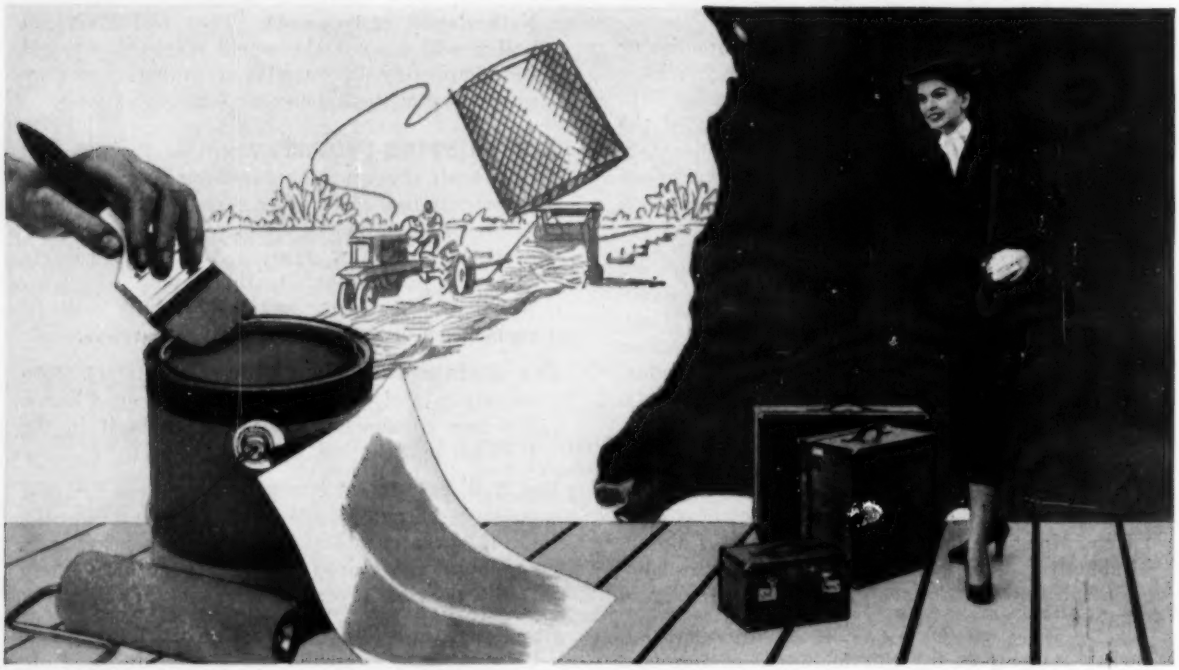
Restoration of the old three-cornered deal—previously the monopoly of the Swiss banks—is legally permitted within the eight countries. A Dutch bank, for instance, is now allowed to buy sterling from a Swedish bank to cover a customer's obligations to Britain.

Second significant step toward convertibility is Britain's progress in liberalizing trade. Over half of her imported commodities are now traded on a private basis. Complete arbitrage (purchasing in one market for immediate resale in another) is possible for lead, zinc, tin, aluminum, copper, tea, cocoa, and rubber. You can expect other key imports to be freed before long.

DOW

DOWICIDE PRESERVATIVES MAKE EVERYDAY PRODUCTS LAST LONGER

DOW industrial preservatives control mold and bacteria attack on raw materials and finished products



Industry the world over is increasing manufacturing efficiency and improving product quality with DOWICIDE PRESERVATIVES. Controlling spoilage caused by microorganisms increases profits and makes finished products last longer—sell better.

Dow manufactures fourteen different DOWICIDE PRESERVATIVES. In the leather industry, they prevent bacterial decomposition in every phase of the processing operation. Adding a DOWICIDE PRESERVATIVE to latex and other water-base paints prevents bacteria growth during shelf life—prevents mildew formation on painted surfaces. Today, DOWICIDE PRESERVATIVES keep farm baler twine strong and serviceable under all weather conditions.

DOWICIDE PRESERVATIVES are widely used in many other industries . . . paper and pulp, lumber, adhesive, textile, petroleum and farming. Wherever mold or bacteria growth results in a processing or selling problem, look to DOWICIDE PRESERVATIVES for a sure, economical solution. For more information about DOWICIDE PRESERVATIVES, write to Dow, Dept. EX 3-53.

DOW produces more than 600 chemicals including industrial and agricultural chemicals . . . fine chemicals for the pharmaceutical and a variety of other industries . . . chemicals basic to progress and industry.

Look to DOW for high quality chemicals

GLYCOLS are used as solvents, moisture control agents, plasticizers, and lubricants. Write for information on ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, dipropylene glycol and other Dow glycol derivatives.

AGRICULTURAL CHEMICALS—To help farmers raise more and better crops and livestock, Dow manufactures weed killers, insecticides, fungicides, soil and grain fumigants, plant growth regulators, veterinary chemicals and wood preservatives.

DOW CHEMICAL INTERNATIONAL LIMITED
Midland, Michigan, U.S.A.; 21 Dreikoenigstrasse, Zurich 2, Switzerland, Cable: Dowintal

DOW CHEMICAL INTER-AMERICAN LIMITED
Midland, Michigan, U.S.A.; Edificio Artigas, Montevideo, Uruguay, Cable: Dowpanam

DOW

WASHINGTON REPORT

PEACE IN KOREA—if it can be made to last—will bring some major changes in the world economic climate. Washington is working on the assumption that the Korean armistice can be maintained and that there will be no new communist aggressions elsewhere in the immediate future.

This assumption rests on two guesses:

- That the Chinese Communists are under too much internal economic pressure to embark on any new foreign military adventures now. Chinese eagerness to get a Korean truce even in the face of Syngman Rhee's provocations is cited as proof.
- That internal difficulties stemming from Stalin's death will keep the Russians busy at home and conciliatory abroad.

A fairly long period of relative international stability is ahead if these guesses are right. That would force a lot of readjustments in a world economy that has been built on crisis for two decades. Some major trends are clear.

There will be a general reduction of free world economic dependence on the U.S. which will have important economic consequences. U.S. aid will shrink to the vanishing point next year. Congress will not vote for it in the absence of a new communist threat.

U.S. allies will press hard to expand trade with the Soviet empire in order to reduce their dependence on the dollar. There are signs of this already. Western European countries are eagerly shopping for trade deals in China.

France has signed an agreement which will multiply its exports to Russia by ten. Other European trade deals with Moscow are in the works.

Japan will fight hard to get back in the China market as U.S. military procurement falls off. U.S. spending for Korea has been covering Japan's half billion dollar plus yearly trade deficit. The Japanese share of the planned $300 million odd annual spending for Korean reconstruction is not nearly enough.

Washington will stubbornly fight the trend towards more East-West trade. But look for the U.N. to drop the embargo on strategic trade with China, over U.S. protest, before year's end.

East-West trade will not add up to much economically. The Soviet bloc still does not have any big surpluses for export. And foreign trade will remain marginal in the planned Communist economies. But limited East-West trade still can be forged into an effective political weapon by the Kremlin. It looks as though that is what Moscow is planning.

The Russians, for example, have refused to sign a new trade agreement with Italy while giving France a good deal. Reason: friendly relations with one of the big three could pay dividends at the post-Korean political conference, and in Indochina.

Add dwindling U.S. aid and growing East-West trade together and you will get a slackening in the volume of free world trade. Liberalization of U.S. trade barrier will move too slowly—if at all—to take up the slack quickly.

DOWNTURN IN U.S. business activity starting next year could come from Korean peace. Government spending will drop faster than scheduled before the armistice—perhaps as much as $20 billion in the next couple of years. That will take some drive out of the economy.

Tax cuts will take up some of the slack, of course. But more and more government economists are thinking there will be some sort of a settling in the economy next year. This will hurt imports. It also will increase competition in world markets. U.S. business and agriculture will fight to expand export markets.

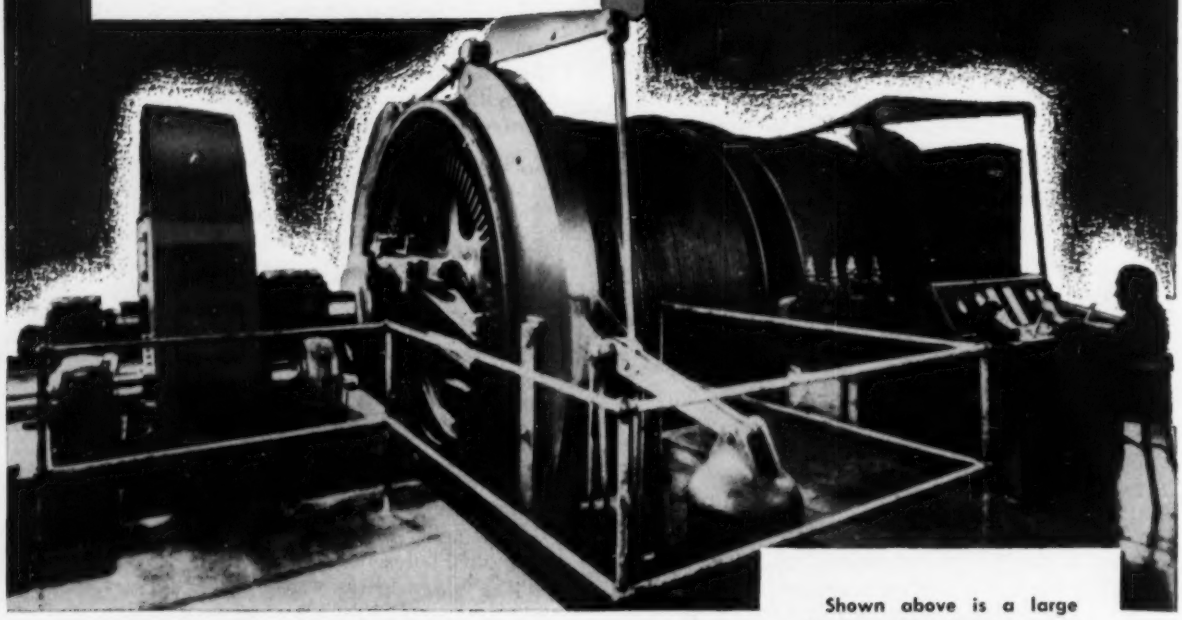
This is happening already with farm products in response to U.S. agricultural surpluses. A dozen bills are pending in Congress to subsidize farm exports. Most of the proposed bills would permit the U.S. government to finance all or part of the dollar cost of selected agricultural exports. Importing countries would pay for them in local currency deposited to U.S. account (see p 7).

The trouble with all these schemes is that they would disrupt world markets—if they worked. The administration will resist Congressional pressure to go in for agricultural "dumping". But the pressure will be strong next year with an election coming up.

Dwindling U.S. foreign aid is spurring administration planning to encourage private investment abroad. Main ideas include: tax preferences on returns from foreign investments, expansion of the U.S. government guarantee program for foreign investments, increased diplomatic efforts to get favorable treatment for U.S. investments abroad.

NORDBERG MINE HOISTS

. . . known the world over for SAFETY—EFFICIENCY and RELIABILITY!



Shown above is a large Nordberg Mine Hoist operated by Empresa Nacional "Calvo Sotelo", at Puertollano, Spain. The hoist, using a 650 horsepower motor, operates a 14,326 pound skip, which lifts both coal and oil-bearing shale from two different levels in the same mine shaft. The coal is used for fuel in powering processing machinery which transforms the oil-bearing shale into lubricants and hard paraffin substances.

NORDBERG has been one of the world's leading producers of mine hoists. Specializing in large mine hoists, Nordberg has been the source of many progressive mine hoist engineering advances in the mining industry. Where large tonnages are being hoisted, for some of the world's leading mining companies, you will find Nordberg Mine Hoists doing a safe—efficient and reliable job.

Write for further details.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin, U.S.A. CABLE ADDRESS: NORDBERG

LONDON
19 Curzon St., W.I.

JOHANNESBURG
42 Marshall Street

MEXICO, D.F.
Delores 3

NORDBERG THE WORLD OVER

SYMONS® GYRATORY CRUSHERS | SYMONS CONE CRUSHERS | RAILWAY MAINTENANCE MACHINERY | GRINDING MILLS | SYMONS VIBRATING GRIZZLIES and SCREENS | DIESEL ENGINES

Dealers in Principal Trading Areas Throughout the World.

XM253

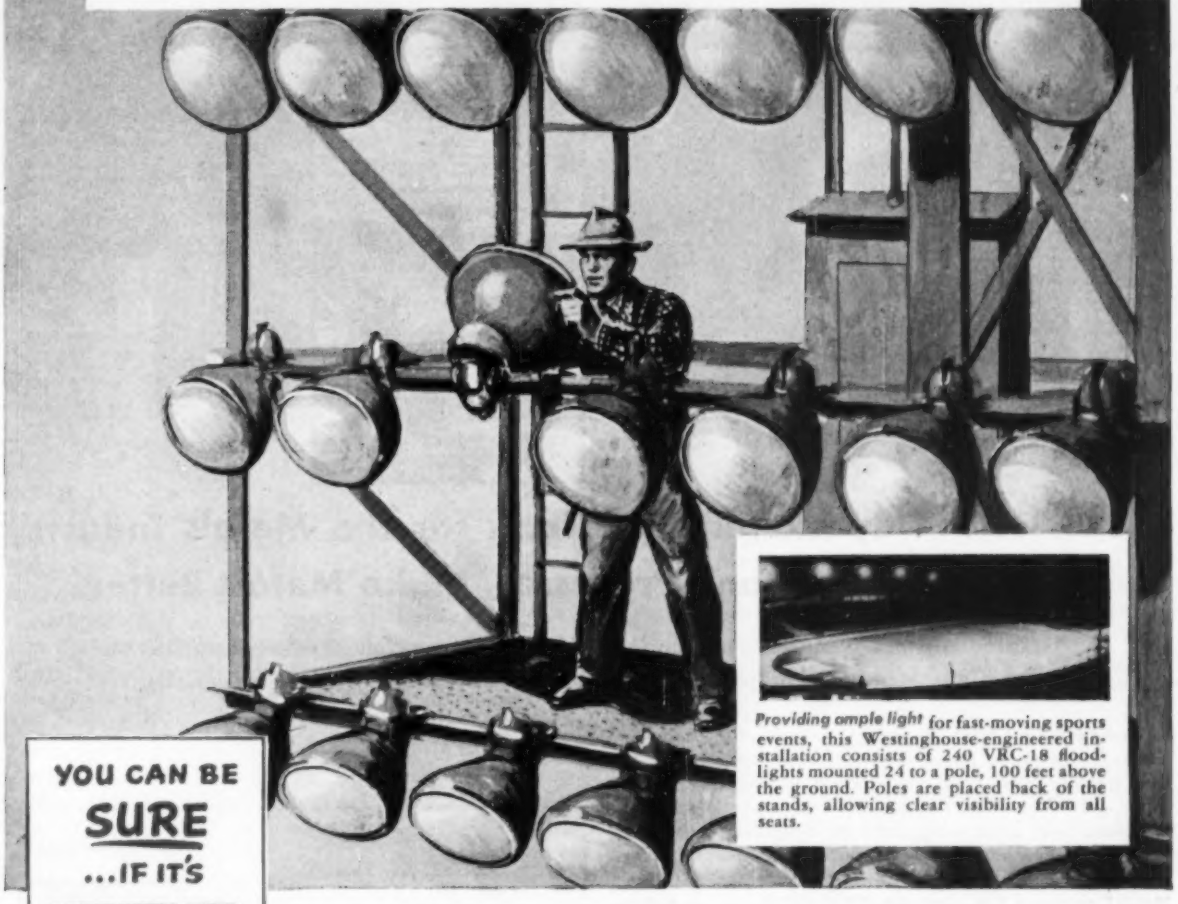
He'd specify Westinghouse Sportslighting

If maintenance men specified sportslighting fixtures, you can be sure the number one choice would be Westinghouse. The reason? Westinghouse equipment is easier to service. Lamp, reflector and lens can be cleaned and changed quickly *on the platform* by swinging back fixture and lens on a special bracket, affording easy and *safe* access to the fixture interior.

Men responsible for building or operating sports fields have other good reasons for specifying Westinghouse. They know a Westinghouse installation helps turn darkness into profits because players and spectators alike appreciate the bright, glare-free illumination Westinghouse engineered projects provide.

Outstanding Westinghouse floodlights are the VRC-18 and VRC-20, which illuminate stadiums and other sports areas from towers or poles. Durable aluminum reflectors, shaped to throw a high-intensity light beam, are Alzak polished for maximum reflection. Lens is heat and impact resistant. Rifle sights on bracket permit quick, accurate aiming of the light beam.

Be sure *you* specify Westinghouse fixtures for easier installation, safer, more economical maintenance and the right kind of illumination for your sportslighting job. Write for your free copy of sportslighting booklet INT-5671.



Providing ample light for fast-moving sports events, this Westinghouse-engineered installation consists of 240 VRC-18 floodlights mounted 24 to a pole, 100 feet above the ground. Poles are placed back of the stands, allowing clear visibility from all seats.

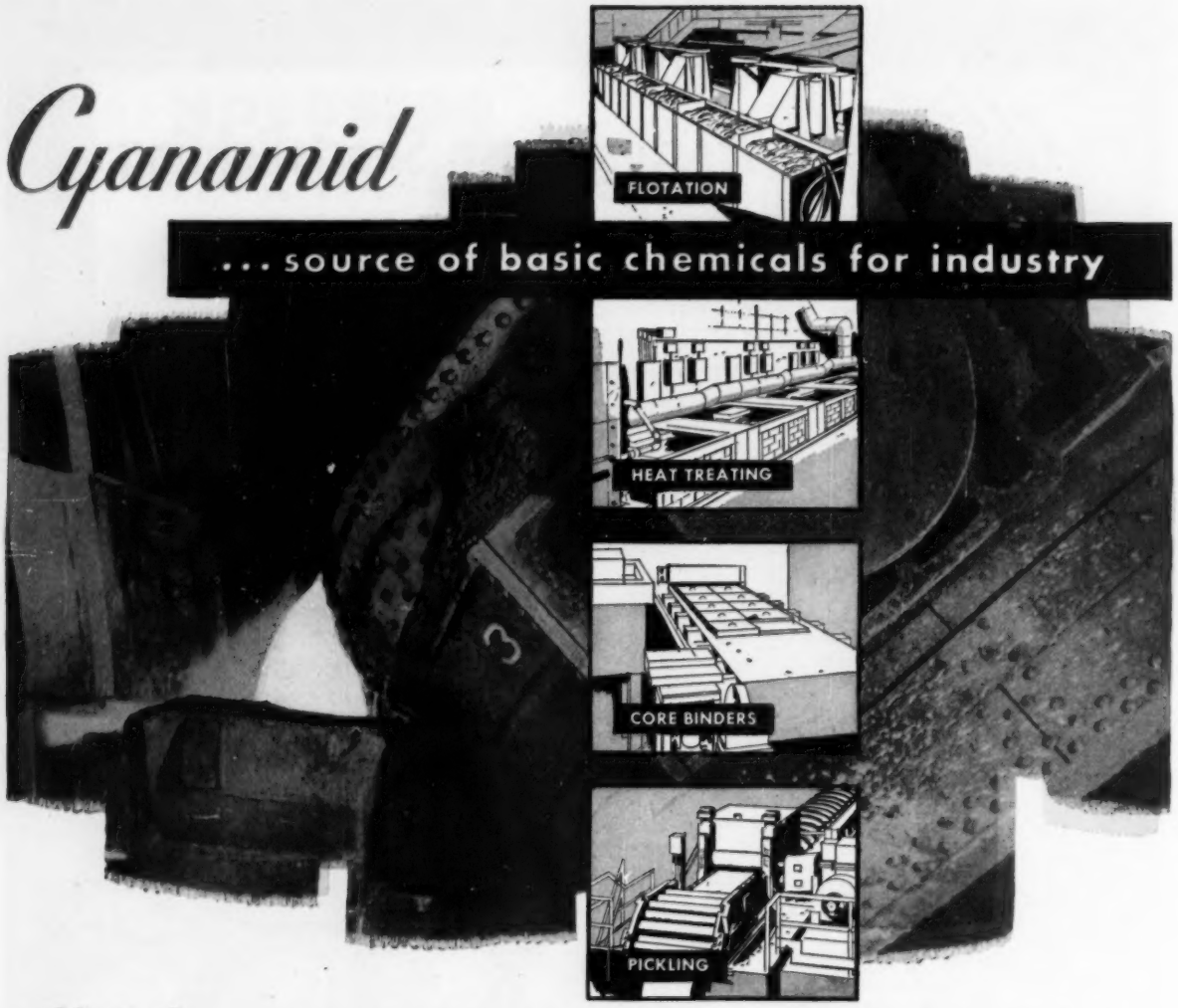
YOU CAN BE **SURE** ...IF IT'S

Westinghouse

WESTINGHOUSE ELECTRIC INTERNATIONAL COMPANY
40 Wall Street, New York 5, U. S. A.

Cyanamid

... source of basic chemicals for industry



Metals . . . Cyanamid Chemicals for the Metals Industry

Help Improve Many Processes, Make Metals Better

To assist the metals industry in securing better ore recovery, more efficient production and improved metal properties, Cyanamid offers a variety of quality chemicals.

Ladle Additive for Steel—Calcium Cyanamide 6-16, Granular Form, for increasing nitrogen content of molten steel.

Heat Treating Salts—AEROCASE® Case Hardening Compounds, AEROCARB® Carburizing Compounds, AEROHEAT® Heat Treating Salts—salt bath compounds for tempering, annealing, hardening, quenching, nitriding, carburizing, martempering, austempering and other heat treating processes.

Metal Processing Aid—AEROBRITE* Metal Processing Aid, as an inhibitor in the pickling of steel and to minimize sludge formation in electrolytic tin plating. Also used in carburizing steel.

Lubricant for Powder Metallurgy—CYANAMID Zinc Stearate, for mold and internal lubrication.

Foundry Core Binders—CYACOR® Thermosetting Resins, for use as fast-curing core binders.

Surface Active Agents—AEROSOL® Surface Active Agents, for cleaning, plating, and rinse baths for uniform plating and water spot elimination.

AMERICAN *Cyanamid* COMPANY

30 Rockefeller Plaza, New York 20, N. Y.

Representatives Throughout the World

*Trade-mark

Products are not offered in countries where adversely-controlled patent rights exist.

SEPTEMBER 1953
VOLUME 8 • NUMBER 9

McGRAW-HILL
DIGEST

For Foreign Exporters, Customs Simplification Means . . .

It's Easier to Export to the U. S.

The jungle that is U. S. Customs got a face-lifting in Congress but not everything asked for was passed. So don't get too optimistic. U. S. Customs can still give you plenty of headaches.—An original Digest article

IT HAS BEEN SAID that it often takes longer for foreign goods to clear U.S. Customs than it took Columbus to discover America.

Actually, this is an understatement. Many customs cases drag through the courts for years—some as long as 20 years. There are over 63,000 cases now pending compared to 12,000 in 1948. When an importer finally does get his goods cleared, he frequently finds that the appraisers have cut his profits to zero or worse.

The cause of this importer's nightmare is the jungle of customs regulations that has grown almost unchecked since the early 19th century. This year, for the first time, the U. S. government is making a determined effort to hack away some of the red tape. A customs-simplification bill finally has been passed by Congress after 2 years of controversy.

The bill only does about half the cleanup job that is needed to bring American customs practice into line with modern trading conditions. The bewilderingly intricate rate structure is left intact. Nothing has been done to simplify the labyrinth of obsolete and overlapping classifications into which imports are divided for duty assessment.

And most important, the provision for a new system of determining the value of imports as the basis of figuring duties got a last minute veto in the Senate. Reason the Senate gave: not enough time to hold hearings at this session. But one congressman did introduce a separate bill including the valuation provision. It will be held over till the next session.

But the bill simplifying customs still is a step in the right direction. It will give at least a psychological boost to foreign countries struggling to close the dollar gap through trade, not aid.

Just what the practical effects of the new rules will be is sheer guesswork at this point. It all depends on the extent to which traders take advantage of the reforms. It is a good bet, though, that there will be some increase. More important perhaps than the quantitative boost in over-all imports will be the reduction in delays and uncertainties for importers.

Then too, simplification of customs red tape is sure to encourage new exporters to try the American market. The complexity of the old system put a premium on sophistication for both U. S. importers and foreign exporters. The big traders with long experience in threading the maze of regulations were masters of a lot of legal tricks for getting their goods

"The way the law stands now you can get startling results"

cleared at low evaluations. Frequently, the newcomer lost money. The new reforms will cut his risks.

The most important reform that the administration asked for but did not get was a new method of determining the value of imported goods for duty assessment. The biggest single trouble for importers is that they frequently do not know until long after they sell their goods how much duty they owe on them. Often they find that the duty retroactively wipes out their profits or causes losses.

The difficulty of fixing the value of goods under the present formula accounts for much of this uncertainty. Instead of five alternative methods of assessing value —foreign value, export value, U. S. value, cost of production and U. S. selling price—the new rule would have made export value the yardstick in most cases. Cost of production would have formed a basis only as a last resort.

The way the law stands now you can sometimes get startling results. A Bristish scientific instruments manufacturer, for example, sold his wares both through agents (at a discount) and direct to consumers at retail price. A Canadian plywood manufacturer sold 95% of his output in Canada in 5,000-sq.-ft. lots at substantial discounts; the other 5% was sold in smaller lots at a higher price, but there was a larger number of separate transactions involved.

In both cases, the customs court ruled that the "usual wholesale quantities" price was that charged for the largest number of transactions. So duty was assessed on the basis of the higher price.

One pitfall that has been removed from the regulations is the undervaluation penalty. Formerly, importers had to pay an additional duty of 1% of the final appraised value of his goods for each 1% that this value exceeded his declared entry value. Thus, if an importer declared $800 as the price he paid for the shipment and it finally was appraised at $1,000, he had to pay out another $250.

If he overvalued, he was caught too because he then had to pay duty on the basis of his declared value if it was higher than the final appraised value. The new rules do away completely with the undervaluation penalty. Duties will be solely on the appraised value.

The new law makes a clean sweep of a jumble of marking regulations that in many cases made it physically impossible to export certain articles to the U. S. The old marking rules for surgical and dental instruments, cutlery, and such items, for example, required that each article had to have the name of the maker or purchaser and of the country of origin sunk on it. The marking had to be in a specific place for each product.

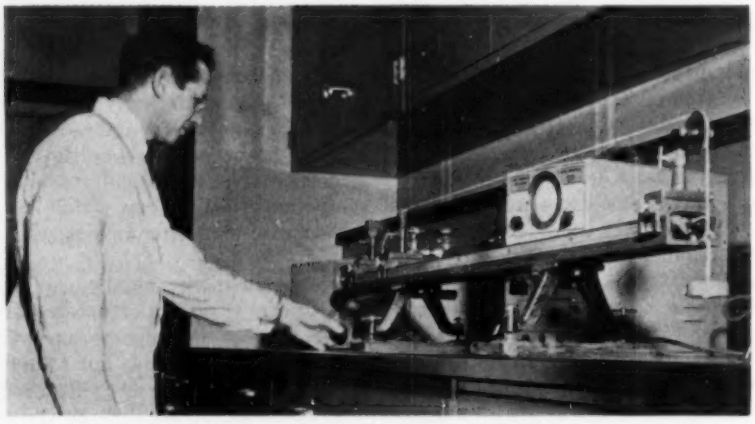
Goods were rejected if the name of the manufacturer was alongside the country of origin instead of above it. Sometimes it was physically impossible to get the marking on the part of the article specified. Things like razor blades and surgical needles were shut out altogether because it was impossible to die-stamp them.

Another important reform in the new law will permit lead and zinc bearing ores to be assayed at the port of entry instead of forcing importers to transport them to inland smelting and assaying establishments. Most other nonferrous metal ores already are assayed on the spot.

These are just the highlights of the customs simplification law. Other provisions cover simplifying of accounting and administrative procedures, free entry for non-commercial exhibitions, drawback privileges, and free entry provisions for travelers.

For example, a foreign visitor may bring into the U. S. duty-free for his personal use automobiles, trains, aircraft, motorcycles, baby carriages, bicycles, boats.

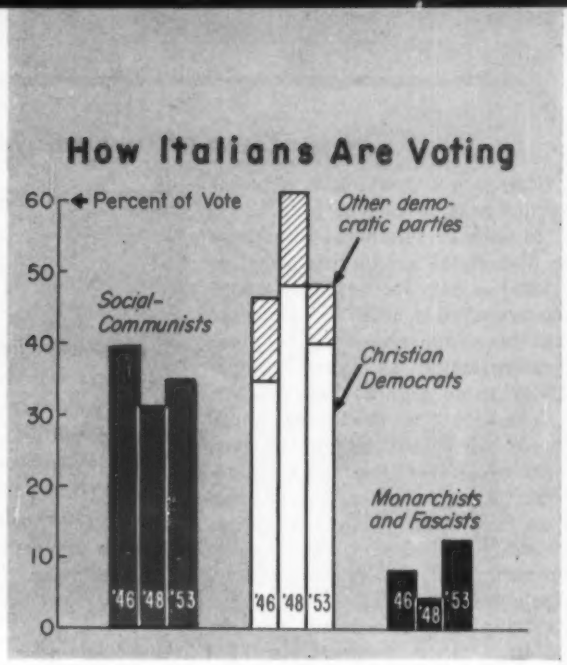
The new law still leaves a lot of red tape to be cleared away, of course. One trouble remaining is the classification of imports for duty assessment. Each one of literally thousands of different classifications bears a different rate of duty. Many of them are obsolete. In many cases, it is impossible to classify accurately new products, but no way has yet been found to simplify classifications without altering duty rates. Any changes in rates immediately would run into heavy protectionist opposition in Congress.



Measures Fiber Characteristics with Sonics

Sonic-modulus apparatus for determination of fiber characteristics is shown in operation in the Laundry and Textile Research Department of Wyandotte Chemicals Corp. It is measuring the length of a sound wave of known and variable frequency that is sent through a fiber or yarn under tension. A difference in wave length after treatment of the specimen in any way yields information as to just what change has taken place in the structure of the inner fiber.—Textile World, July, p244

The June elections in Italy, plus the fall of the De Gasperi government in July, showed a strong trend away from the democratic center—to both the Left and the Right. So if any Center government is to survive, it must solve the severe problems troubling the Italian people.—An original Digest article



Italy—Country of Struggle

ROME—In the age-long struggle waged by Europe to save herself from being crushed by the great Asiatic masses, Italy has in all times been one of the fundamental strongholds.

As far back as the 5th century AD, the first great Mongolian invasion of Western Europe, that of the Huns, was stopped by the combined drive of the armies of Aetius—the last of the Roman generals—and of the rising Catholic Church.

In the following centuries, the European recovery against the Saracen invasions was due above all to the corsair fleets of the young Italian maritime republics. They enabled the West to fight the Crusades and thus start the reconquest of the East.

Toward the end of the 16th century, Italy, under the auspices of the Church and the Venetian Republic, opposed the threat of the Turks. The Turks' advance into the Mediterranean was stopped once and for all by the famous Battle of Lepanto, which has the same historical importance as the Battle of the Aegadian Islands and the Battle of Trafalgar.

On each of these epoch-making occasions, Italy played a decisive part. The history not only of the Mediterranean but of Europe as a whole would have been quite different if Italy had stood apart or, worse still, if she had flanked the hostile forces advancing from the East toward the heart of the Continent.

Once again, Italy is in the front lines of the battle that, after several centuries, has flared alive between West and East. This time the battle differs from those of the past by taking place not only at and beyond European frontiers but within the Continent itself, in its ancient cities, in the very capital of the Catholic religion.

It is a battle in which about half the Italian nation is arrayed against the other half. Or it could even be considered a three-way battle—Communists on the left, Fascists on the right, and the Christian Democrats and other democratic parties in the center.

That is the battle line, ill defined as it is by the bewildering array of splinter political parties. But so far, the center democratic parties have retained control since the war. They recognize that the same natural revolution is taking place in Italy that has taken place long ago in the more advanced democratic governments of northern Europe.

They recognize too the desire of the people to take an active part in the political life of the country and to collaborate in forming a government that will take into due account the interests and desires of all. They see it as the logical consequence of the progress Italy has achieved despite all the wars and governments it has had in its last 80 years of independent national life. This progress finds expression in the spread of education and in an improved standard of living.

But the general elections of June 7 have shown by their results that the country has not succeeded in making the best use of 5 precious years—years in which the government, supported by the great majority of the population and by the immense means, both moral and financial, of the United States, had been in a uniquely favorable position for facing and solving some of Italy's most serious problems. Let's see why this has happened.

There can be do doubt that in the past 5 years, since the Marshall Plan began to inject new strength into Italy's stagnant economy, production has risen. This improvement is shown by the index number for industrial production

(1938 = 100), which attained a record peak in 1952 of 142.

In spite of this notable increase in industrial production, employment has only increased by 2.06% as compared to 1938. The increase has been due above all to plant modernization as labor productivity is no higher than in 1938.

The industries producing capital goods are those that for the most part are showing marked advances over previous years. Some progress is still being made in metalworking industries, thanks to foreign orders. But the central nucleus of the manufacturing industries has succeeded only in holding their former positions reached in 1951. The principal reason is the slowness with which the purchasing power of the home market adjusts itself to the larger available production of goods.

Agricultural production has only now returned to the 1938 figures for production. Although a large part of the national territory is already cultivated intensively, experts believe it would be possible to raise production by at least 25% in a few years.

But this increase would require large-scale land reclamation works, drainage, and irrigation. It would require an investment of some $800-million per year—a sum that exceeds several times that invested in the last few years in agricultural improvements.

The fundamental problem of Italian economy is that of investments. Total investments made during 1948-52 in the several branches of Italian productive activities—agricultural, industrial, transportation, public works, and others—amounts to somewhat less than 9,000-billion lire (about $14-billion).

This amount also includes the funds assigned for amortization and maintenance—about 42% of the total. Of the remaining $8.1-billion, nearly $5-billion have been invested by the government out of budget receipts and Economic Cooperation Administration counterpart funds.

The capital used for new investments by private persons has therefore been about $3-billion over the 5-year period. This means that only 6% of gross private income has gone into new investments. And, even so, 45% of private investments have been directly encouraged by the facilities, guaranties, and loans granted by the government.

PROGRESS IN ITALY

	1948	1949	1950	1951	1952
Gross National Income (billions of lire)	7,169	7,640	8,323	9,606	10,105
Total Investments (billions of lire)	1,513	1,451	1,621	2,046	2,099
Industrial Production Index (1938 = 100)	99	105	121	138	142
Imports ($-millions*)	1,501	1,498	1,483	2,167	2,313
Exports ($-millions)	1,067	1,107	1,208	1,645	1,383

* $1.00 = 624.9 lire

Investments so far made have financed these key industries:

• **Steel**—This year the new steel works of Cornigliano will begin operations. Italian metalworking industries will be able to get semimanufacturers of iron and steel at a cost equal to that prevailing on the international market—35% lower than the present Italian price level for such products.

• **Oil**—By the end of the year, Italian refineries will reach a capacity of 13-million tons of refined oil, as compared with the prewar 2-million. Italy will thus be changed from a refined-oil importing country to an exporter.

• **Electric power**—New hydroelectric and thermal power stations now operating have attained a potential output of 30-billion kw.-hr. as against the 20-billion of 1950.

• **Methane Gas**—Italy now leads in Europe, not only for volume of production but also for the new chemical works that will soon be operating to use methane gas as their raw material.

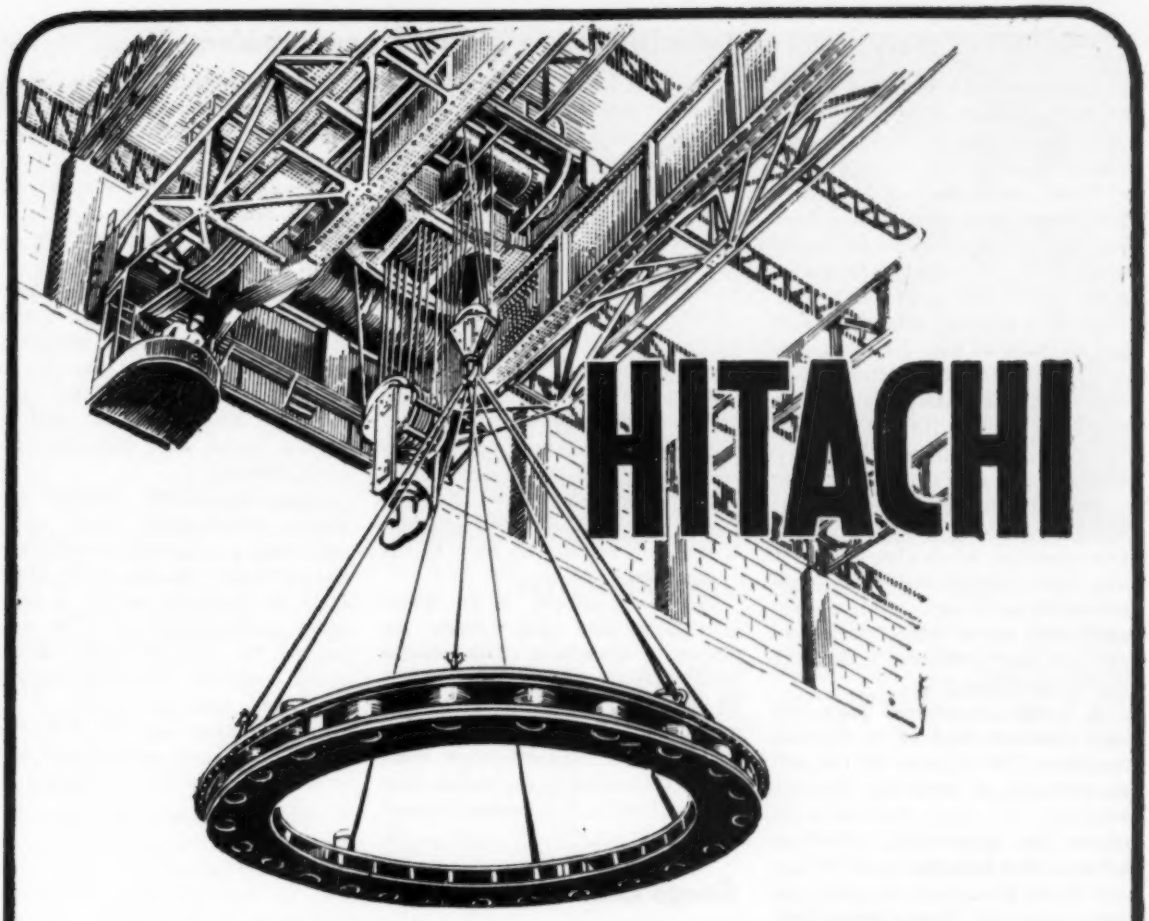
All these are important achievements that will greatly affect Italian economic progress. But they are only a start toward modifying and strengthening the Italian productive system, finding new opportunities for employment, and raising the purchasing power of the Italian people.

Now, 8 years after the end of the war, the problem of the immense mass of unemployed and underemployed, amounting to nearly 36% of all Italy's labor power, has still to be faced. Only since 1952 have the first special measures been taken to carry out a 10-year plan of investments to help the 17-million inhabitants of south Italy and the Islands, whose purchasing power is only half that of the northern and central Italians.

Besides this, nothing has been done to solve the grave problem of the middle classes. Most of these people have seen their savings destroyed by the war and by inflation. Because of their low pay scale (salaries of clerical and employee classes are still 33 to 50% below prewar levels), they can barely provide for the most urgent daily needs.

The Italian government has been unable to solve these problems. Out-dated administrative and fiscal services and serious deficiencies in economic policy have been more responsible than scarcity of means for their failure.

Even today, after the fiscal reform of 1950, Italy obtains from direct taxation only 2.5% of the total national income. And during the 1948-1951 period, Italy accumulated in dollars and credits



HITACHI

MACHINERY
FOR
CIVIL ENGINEERING AND CONSTRUCTION

Efficiency Durability Economic maintenance

Tower Excavators	Self Moving Cranes	Portable Conveyors and other equipment
Power Shovels	Concrete Mixers	Air Compressors, mounted on pneumatic tires
Draglines	Cable Cranes	
Clamshells	Jib Cranes	

New Marunouchi Building, 4, 1-chome, Marunouchi, Chiyoda-ku, Tokyo

Hitachi, Ltd.

"Italy must act decisively on old and new problems"

in unconvertible currencies held abroad an amount roughly equal to the aid received during that same period from the U. S.

These conditions help to explain how years that might have been precious for making the necessary alterations in Italy's antiquated productive equipment have been lost. They explain why the standard of living of most Italian people has benefited but little from American aid. And they explain also the recent political events and the renewed communist advance.

What can any democratic government do to change the trend of these conditions? The answer to this question, while simple to give but undoubtedly politically dangerous to carry out, is this: to act decisively on a whole series of old and new problems facing the Italian government.

A 5-year investment plan had been already drafted in the last months of life of the old de Gasperi government. It provides for the erection of new hydroelectric plants for generating 10-billion kw.-hr.; for building and enlarging 33,000 kilometers of roads and speedways; for flood-control projects; and for taking water supplies to 2,200 Italian communes that are still without them. A 15% rise in agricultural production is to be obtained by land reclamation and by making 70,000 new tractors available to the farms. Industrial output is to be increased by 40%.

Carrying out this plan would require the solution of serious problems relating to more than financing. Platform statements made by former Premier de Gasperi and spokesmen of his party have set forth with sufficient clearness the way by which these problems would be solved by a democratic government.

Severe measures would be taken to prevent tax evasions. New receipts to be obtained from direct taxation would allow reductions in indirect taxation, which now accounts for nearly 30% of the cost of the products placed on the market; it is one of the chief causes of market stagnation.

Bringing the fiscal administration up to date would encourage large-scale foreign investments. In recent years foreign investors have stayed out of Italy in spite of the high rates of interest that rule there. A bill to be introduced into Parliament would repeal the restrictions still in force under the Act of 1948 and provide special guarantees to foreign investors for transfer of capital and interest payments and for the supervision of the enterprises they finance.

Government action on foreign trade could be expected too. Italy showed great export activity in the sellers' market following the war and after the outbreak of the Korean conflict. But she ran into trouble on exports as soon as the boom ceased.

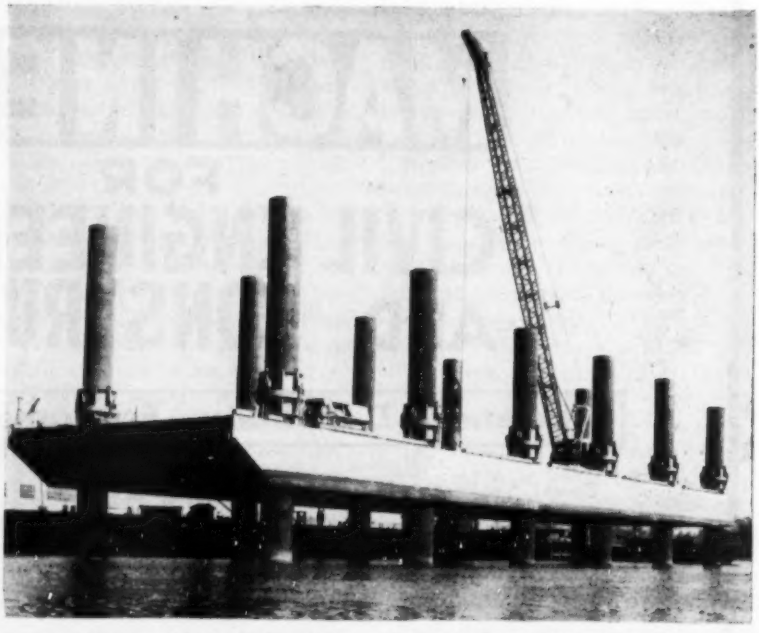
So one proposal is to adopt a policy that will grant exporters a drawback of the excise duties levied on production and of the tax on turnover on the goods they export. This policy has already gone into effect on some exports directed to the dollar area or supplied to U. S. armed forces.

The experience of recent years has made it clear to many that any plans undertaken by the state, however well conceived, will not succeed in the absence of an efficient administrative system. Therefore, an administrative reform should take first rank.

This reform has long been studied. It would confer a new status on the executive branch of the administration, placing on them new responsibilities and raising their salaries, and it should inject new life into the Civil Service.

Some may doubt whether any Italian government could carry out such a program quickly and successfully. As we go to press, Italy is operating under a caretaker government. If it is succeeded by a dominantly democratic coalition, the will to act will be there. And the results of the recent elections and the downfall of the de Gasperi government may stimulate government officials into action.

Barge Climbs Own Legs . . .



. . . to become a dock high and dry above water. In a few hours it can be lowered into the water and towed by tugboat to a new location. Special jacks on legs permit them to be raised and lowered. Builder is Consolidated Western Steel, a division of U. S. Steel Corp. Barge-docks are in use in Greenland and in Venezuela on the Orinoco River. New ones being built for U. S. Army will be 300 ft. long. —Weld Eng, June, p6

Metal Smelting Method Reduces Ore with Wood

New development by the U. S. Bureau of Mines may improve the production of ferroalloys and other electrothermal products. It substitutes wood waste or sawdust for much of the coal, coke, or charcoal normally used in the furnace charge as the reducing agent.

Use of wood in electric smelting is not new as small amounts have been added to get a more porous charge so gases can escape more freely. But the Bureau found that larger amounts also help to control both the feed rate to the smelting zone and the smelting temperature.

Other advantages include more uniform furnace operation, correct smelting-zone temperature for best reduction, less power and electrode consumption, reduced loss of metal vapor through blowing, lower carbon costs, and direct smelting of ores that would normally require sintering or other agglomeration treatment.

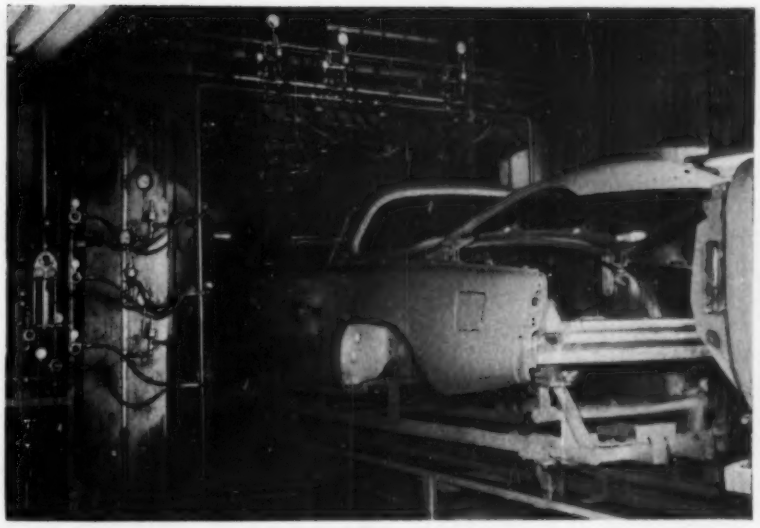
Commercial applications may be expected on smelting operations other than for ferroalloys. M. A. Hanna is building one of the world's largest smelters to use the process for ferronickel. Three other applications are for silicomanganese, chromite, and Scappoose (Ore.) iron ore, which has a high water content and small particle size.—Chem Eng, June, p122

Makes Better Pigs

Yeast, or yeast and cystine, does not replace dry milk in the diet of hogs fed barley as the chief foodstuff.

In recent tests, three groups of six pigs were each fed barley plus dry milk solids, barley plus feed yeast (from aerated molasses medium), and barley plus yeast with 2% cystine supplement based on the ration. Experimental feeding lasted 124 days, during which milk-fed pigs reached 248 lb., yeast fed 196 lb., and yeast-plus-cystine-fed 237 lb., for weight gains of 39.0, 33.8, and 36.5% of feed, respectively.

On slaughtering, yeast-fed animals showed greatest loss, milk-fed least.—Food Eng, June, p193



Electrostatic Spray Primes Car Bodies

All exterior body priming is done automatically in Ransburg electrostatic spray booths at Studebaker Corp. Finish painting may soon be done the same way. As body enters booth, it trips lever to direct paint from guns into electrostatic field about the grounded car body. Grounded body attracts paint. Painting time is 13 sec. Finish is so good that Studebaker engineers are considering reducing or eliminating water sanding of prime coats.—Iron Age, June 25, p82

New Wiring Tool Makes Solderless Connections

An air or electrically operated wire-wrapping tool, developed by Bell Telephone Laboratories for connecting wire leads to relay terminals, is giving better, more uniform connections. They are also less costly, and production rate is higher than was possible with previous wiring methods.

Wrapped connections can be used with a wide variety of materials, including aluminum. Western Electric Co. is now wiring flat-spring relay terminals with the new tool. Although it was originally expected that tinned terminals and wire would have to be used, with soldering to give a stable low-resistance junction, it has recently been shown that soldering is not needed.

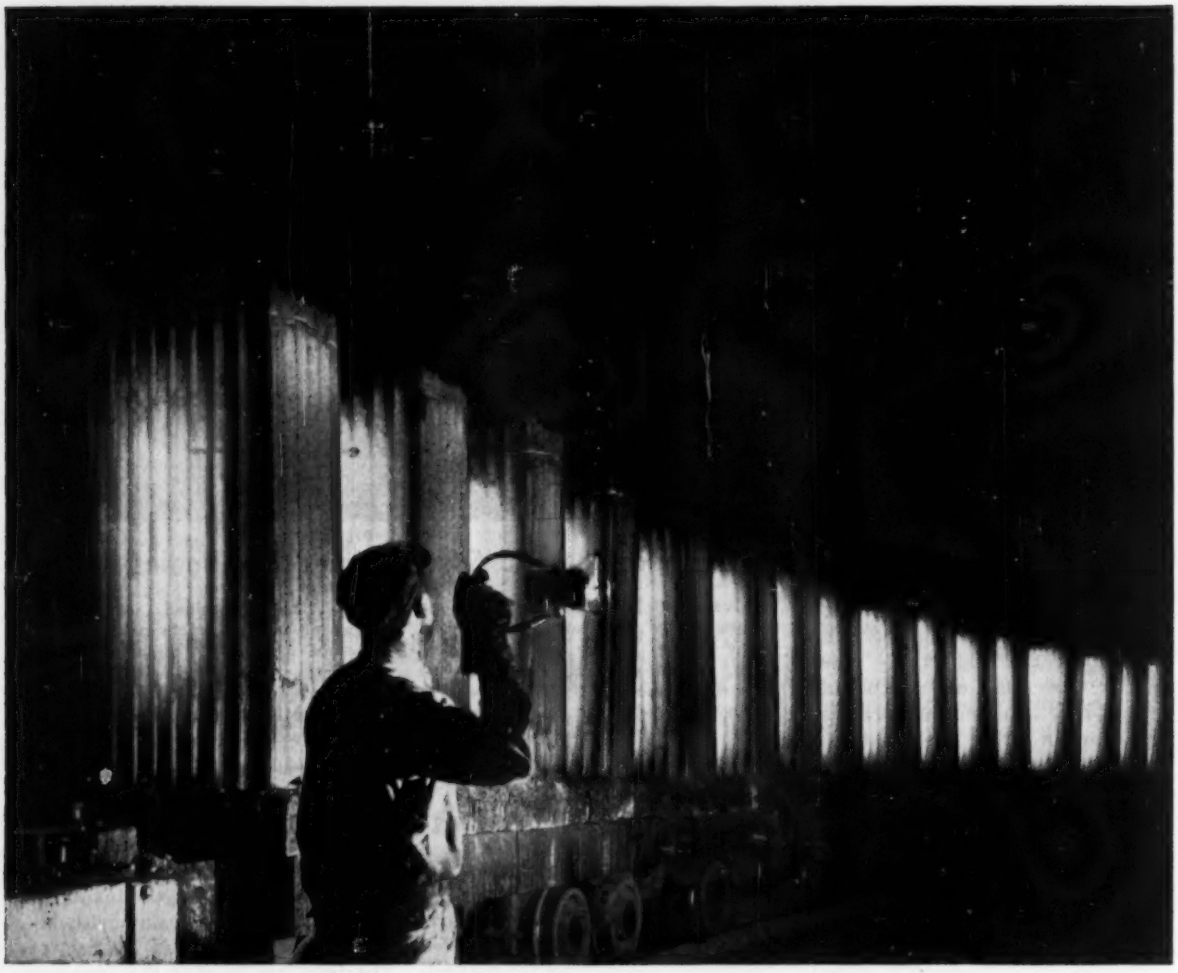
The tool consists of a rotating spindle housed in a stationary sleeve. To make a connection, the bare end of the connecting wire is inserted in the outer groove of the spindle up to the insulation. It is then bent upward and back along the spindle so that the insulated portion of the wire is anchored in one of the notches in the outer housing of the tool.

The operator holds the insulated wire against the housing with his left hand, then applies the tool to the terminal so that the terminal enters the round hole in the spindle. Operating the trigger-type electric switch or air valve on the tool rotates the spindle, thereby wrapping the bare connecting wire around the terminal under tension.—Electronics, June, p272

Photographs in Glass

Danish process for fusing photographs into glass has been introduced into the U. S. by the Daniroca Co. of Copenhagen. It will be employed to make glass trays to carry advertising messages.

Process details are secret. The hand-ground, hand-polished bentware will be imported from Denmark and the photograph fired into the glass in an American plant. The reproduced advertising message can be in color. Both design and colors become a permanent part of the product.—Ceramic Ind, June, p106



MORE STEEL

Millions of additional tons from Bethlehem plants

So that more steel will be available to the industries of the world, Bethlehem is rapidly expanding the capacities of its plants in the United States of America.

For example, the great Sparrows Point Plant (world's largest on tidewater) will soon have an annual capacity greater by 2,000,000 tons than it had a few years ago. From this plant, in the Port of Baltimore, products for export distribution can be loaded directly on board ship.

Increased production means that greater quantities of steel products will be available for the export markets. In addition, it means that Bethlehem's friendly offices and representatives throughout the world will be able to serve you better and more promptly than ever before. Bethlehem Steel Export Corporation, 25 Broadway, New York 4, U.S.A. Cables: "BETHLEHEM, NEWYORK."

Offices and representatives in all principal cities of the world

Bethlehem supplies steel to world markets in all forms, including

BARS ★ ALLOY STEELS ★ TOOL STEELS
PLATES ★ STRUCTURAL SHAPES
SHEETS ★ STRIP ★ TIN PLATE ★ PIPE
WIRE PRODUCTS ★ RODS ★ RAILS

★ BETHLEHEM STEEL ★

704E

This Month's How To . . .

. . . travel both water and land

Imperial Oil, Ltd., has solved its trouble in getting exploration parties around Canada's muskeg country. The answer is a 14-ft amphibious vehicle that can travel marshes, rivers, and frozen ground as well.

The Muskeg Crawler is an all-track unit with a bearing weight of less than 2 lb. per sq. in. It can float and can carry a payload of 2,000 lb. It has a top speed of 16 miles per hr., all-hydraulic drive, separate power transmission to tracks, power steering.

The crawler has been so successful in tests that Imperial has licensed commercial production.—Oil & Gas J, June 29, p47

. . . save time at the stock room

In production schedules where every minute counts, efficient stock handling is essential. In the Puerto Rica plant of Carbie Aircraft Radio Corp. the young lady, right, is shown picking up material she ordered earlier by dropping her request into the drawer with her name on it. After putting the requisition in drawer, she rings a buzzer.

When the stock boy is free, he comes and fills her order. She returns later and claims it. No crowd collects at the window, no one is kept waiting, the stock boy keeps on schedule.—Electronics, July, p262

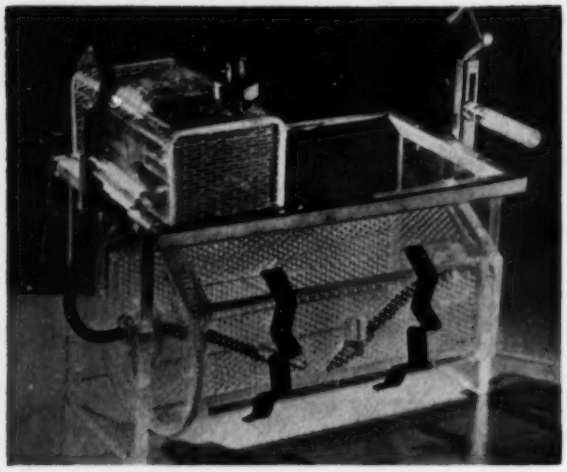
. . . speed equipment maintenance

Lunch-time is service-time for earthmoving equipment on a highway job under contract by Serafini Construction Co. While its driver is getting his noon meal, this big diesel-powered truck is fueled and lubricated to carry it through the rest of the day's work.

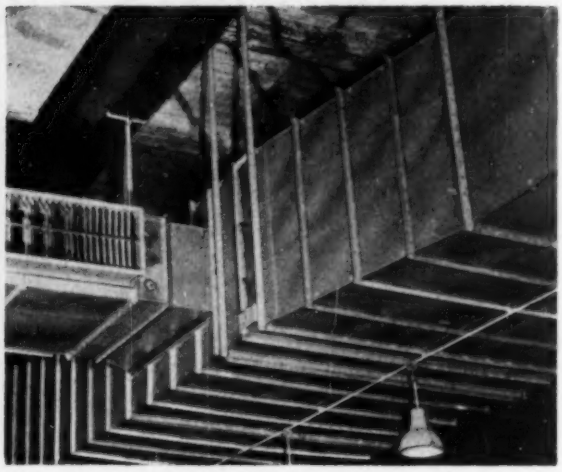
A special truck brings lubricants directly to each machine on the job. The truck carries lubricating equipment powered by compressed air stored in tanks fastened to the truck frame. A compressor driven by the truck engine keeps the tanks charged.

Local distributor brings all fuel directly to the job. Tank-truck driver goes from machine to machine, filling tanks and keeping records as he goes. —Const Meth & Equip, July, p54

Acrylic-Resin Plating Barrel



Buna N-Buna S Duct Work



To Fill Many of Your Needs, Here's How To Pick . . .

The Right Industrial Plastic

Many engineers and designers hesitate to specify a plastic to fill a job because so many plastics can do so many things. But their properties plus practical experience point the way to sensible selection

PLASTICS can do many jobs in industry better than the older materials. That is why the plastics industry expects a tremendous growth in their use as materials of construction.

Many plastics in the past few years have gone into duct work, tanks, linings, piping, and similar jobs. But the backlog of experience to guide the engineer and designer is still small. However, the physical properties of plastics and the practical experience to date can act as guide posts in their selection for industrial purposes, as in chemical plants.

Major plastics are listed in the table on the next page. This list is not intended to be complete. It gives representative types only.

Acrylic Resin—The plating barrel shown above benefits from acrylic resin's resistance to corrosive plating solutions and its low electrical conductivity. Acrylic resin can handle inorganic acids up to 50% concentration.

The resin's shatter resistance, outdoor durability, lightweight, and rigidity will contribute to its substitution for plate glass. Other uses: hood doors, wall panels, skylights, light fixtures, signs.

Buna N-Buna S—This copolymer resembles hard rubber in its chemical resistance but is more resistant to dilute nitric and other oxidizing acids. It is tougher and shows good abrasion resistance.

Sheets can be bent into troughs, channels, or ducts, and pipes can be curved to any desired radius by heating to 85°C. in hot water or in hot-air ovens. Buna N-buna S can replace alloys for small metal parts, pipes, valves, and sheeting in corrosive services, with no solvents present.

Cellulose Acetate Butyrate—Typical uses include disposal-well, vent, slurry, natural-gas and city-water lines. It can withstand the four major sources of corrosion in oil production: salt water, sour crude oil, corrosive earth, and electrolytic action.

Pipe is joined by bell or spigot joints or threaded fittings of resin or steel. These can be cemented to the pipe. Less rigid pipes need continuous supports.

Chlorosulfonated Polyethylene—This plastic is so new that there is little practical experience with it so far. One application is industrial hose; others expected include gaskets, vessel and pipe linings, protective coatings.

It is superior to elastomers in its resistance to concentrated acids. Resistance to basic solutions, such as concentrated potassium hydroxide or 20% sodium hydroxide, also is excellent. Resistance to oils and aliphatic and aromatic solvents about equals

Polyvinyl Chloride Pipe

Furane Resin Cement

that of Neoprene. It swells considerably in aromatic and chlorinated hydrocarbons.

The heat stability of chlorosulfonated polyethylene is superior to that of most elastomers and many rigid and semirigid organic polymers. It can withstand 100°C. indefinitely and 125°C. for 2 to 3 months.

Furane Resins—The black thermosetting resins made by polymerizing furfuryl alcohol have good resistance to alkalis, solvents, and most acid except oxidizing acids. A major weakness is their tendency to continue to cure and crack in service.

Uses: as cement in building large pickling tanks, as steel-vessel linings, and as an asbestos-filled product for pipes, valves, tanks, towers, and other chemical-processing structures.

Hard Rubber—Resistance is good to acids and inorganic salt solutions. It is easily machined, molded, extruded, cemented. It has low impact strength and limited resistance to oxidizing agents and solvents. Trend is toward replacement by buna N-buna S copolymer, polyvinyl chloride, and polyvinylidene chloride.

Nylon—Uses are many and well known. They include gears, bearings, washers, dome-light lenses, fuse holders, and many small parts for automobiles, cash registers, business machines, and textile machines. Properties are high-temperature resistance, toughness, lightweight, self-lubrication, and ease of molding.

Phenolic Resins—In use in many chemical plants, phenolic resins handle nonoxidizing acids, wet chlorine, and solutions of ferric and cupric chlorides. Certain ones, particularly coke-flour-filled compositions, have good resistance to solvents.

Polychloroprene — Neoprene's properties include good resistance to oil, acids, and aliphatic hydrocarbons, abrasive resistance equal to that of GR-A and GR-S synthetic rubbers, and fair electrical properties. Applications are many: lining for valves, pumps, condenser heads; seals for dry-gas holders; hose, tubing, and gaskets; packing material.

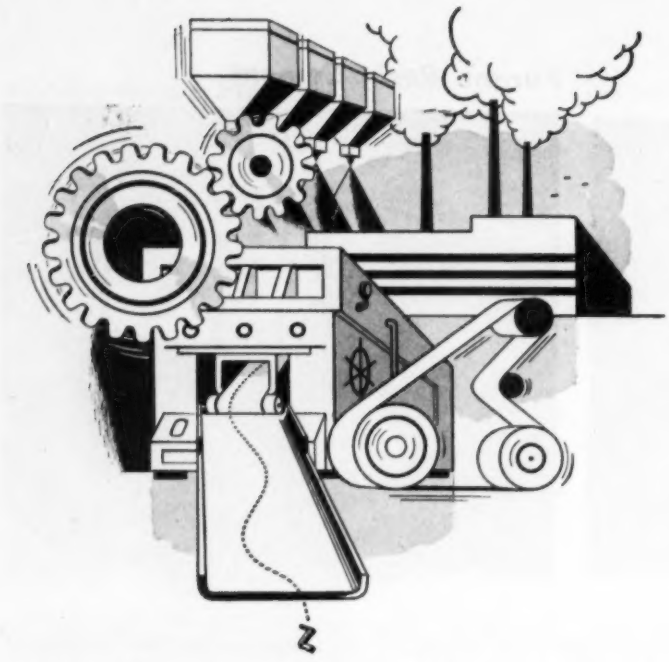
Polyester Film — Polyethylene terephthalate film is a fairly new development. It has high mechanical strength, good dielectric strength, low moisture absorption, and resistance to many chemicals.

A General Electric ¾-hp. motor insulated with polyester film is 40% smaller than a conventional ¾-hp. motor. Other applications: magnetic recording tapes, electrical tapes, pressure sensitive tapes, printed covering for acoustical tile, storm windows, metallic yarns.

Polyester-Glass Fiber—Stronger than steel (weight for weight) and resistant to many cor-

PLANT-CONSTRUCTION PLASTICS

Plastic and Tradename	Manufacturer
Acrylic resin	
Lucite	Du Pont
Plexiglas	Rohm & Haas
Buna N-buna S	
Uscolite	U.S. Rubber
Kralastic	U.S. Rubber
Cellulose acetate butyrate	
Tenite II	Tennessee Eastman
Chlorosulfonated polyethylene	
Hypalon	Du Pont
Furane	
Haveg 60	Haveg Corp.
Permanite	M. A. Knight
Lecite	Electro Chemical Engrg.
Hard rubber	
Ace	American Hard Rubber
Nylon	
Nylon	Du Pont
Phenolic	
Bakelite	Bakelite
Durite	Borden
Durez	Durez
Textolite	General Electric
Resinox	Monsanto
Indur	Reilly Tar & Chemical
Polychloroprene	
Neoprene	Du Pont
Polyester film	
Mylar	Du Pont
Polyester-glass fiber	
Laminac	American Cyanamid
Bakelite	Bakelite
G-E Polyester	General Electric
Marcolite	Marco
MR Resins	Marco
Vibrin	Naugatuck Chemical
Selectron	Pittsburgh Plate Glass
Plaskon	Plaskon
Paraplex	Rohm & Haas
Polyethylene	
Alathon	Du Pont
Bakelite	Bakelite
Polystyrene	
Bakelite	Bakelite
Catalin	Catalin
Styron	Dow
Koppers	Koppers
Lustrex	Monsanto
Cerex	Monsanto
Polyvinyl chloride	
Vinylite	Bakelite
Exon	Firestone
Geon	B. F. Goodrich
Pliovic	Goodyear
Opelon	Monsanto
Marvinol	Naugatuck
Polyvinylidene chloride	
Saran	Dow
Tetrafluoroethylene resin	
Teflon	Du Pont



Much ado about very little!

The factory is "busy as a beehive" . . . *but not half so efficient!* Solution? Put a Remington Rand Production Control System with *Kardex* on the job! Kardex brings you raw materials *when you need them* — never ties up capital by delivering them too early, never holds up production by delivering them too late! Kardex assures an uninterrupted work flow from *order* through *delivery* by coordinating the Production Department with all other departments.

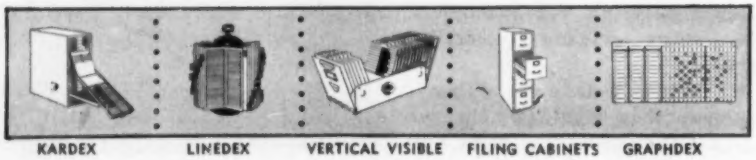
•

Give your business the benefit of Remington Rand's 76 years of experience in developing integrated office systems and equipment. Your local Remington Rand representative has an informative pamphlet "How to Increase Production and Cut Costs" — write for it on your business stationery *today!*

Sales and service in principal cities throughout the world.

Remington Rand INC

International Division, Room No. 9508
315 Fourth Avenue, New York 10, N. Y., U. S. A.



KARDEX LINEDEX VERTICAL VISIBLE FILING CABINETS GRAPHDEX

rosive materials, polyester-glass fiber resins are going into tanks, pressure water lines, salt-water lines on ships, oil-well piping, plating tanks, bath tubs, washing machines, aircraft.

Polyester-glass fiber tanks are hauling fuel and water across the Arabian Desert. Another tank handles aluminum sulfate liquor in a U. S. chemical plant. The U. S. Navy is buying compressed-gas cylinders made of this plastic.

Plastic pipes can be joined or repaired by mixing polyester resin and catalyst and wrapping precut lengths of glass fiber around the area. Extra resin is applied to give a good appearance.

Polyethylene—Lightweight, low cost, and resistance to acids, alkalies, and solvents make polyethylene a strong competitor for handling chemicals. Polyethylene weighs one-ninth as much as steel.

Polyethylene sheets can be welded into all sorts of shapes, including tank linings and top sections. Fusion heat is supplied by a hot-gas gun that uses nitrogen to fuse the polyethylene filler rod to the pipe. Oxidation of polyethylene causes poor joints.

Polystyrene—Good resistance to dilute aqueous acids and bases makes polystyrene suitable for water lines and jet-well lines. Fittings made of polystyrene may be used with polyethylene pipe. Industrial uses include refrigerator panels, trays, door liners, radios, storage-battery cases.

Polyvinyl Chloride—Properties include good resistance to many chemicals, high rigidity, and weldability. A hot-air torch can form them into fume ducts, tank linings, and varied shapes.

Other uses: plumbing, irrigation and oil-well lines; in valves and piping for chlorine, sodium hypochlorite, and hydrochloric acid; in spinning-machine parts, sheeting, duct work, pipes, and valves for handling dilute sulfuric acid in viscose rayon plants.

Polyvinylidene Chloride—Saran is a rigid, somewhat brittle polymer that shows low permeability to most corrosive acids. Uses include lined steel pipes for supply and disposal lines for acids and dilute bases, lined storage tanks for hydrochloric acid containing fluorides, entrainment screens in

evaporators, and window screening. Saran can be sealed by frictional heat or heating on a plate.

Tetrafluoroethylene Resin—Teflon is inert to almost everything and therefore widely adaptable to corrosive service. Added advantages are excellent temperature resistance, low power factor, high dielectric strength, and good arc resistance.

Its antistick property—it does not want to stick to anything, not even itself—makes it a good tire-mold coating. Other uses: gaskets, pump seals, valve seats, diaphragms, pump pistons and impellers, and electrical insulation for high-voltage cable.—Chem Eng, July, p193

Foam Cuts Evaporation

Tiny plastic ballons, called Microballons, can reduce evaporation losses in crude-oil storage tanks by 80 to 90% by forming a 1-in. thick inert, floating-blanket cover. This new foam product was developed by Standard Oil Co. (Ohio).

The ballons, ranging in size from 0.002 to 0.0036 in., are filled with gas, essentially nitrogen, at atmospheric pressure. Use is simple—the ballons are poured through the open hatches to desired depth on the oil surface.

Microballons are now made on an experimental basis. The company expects to have substantial quantities for sale within a few months.—Oil & Gas J, July 13, p74

New Foods From India

Control Food Technical Institute at Mysore, India, has developed several new foods that might help ease that nation's tight supply.

Most interesting is a custard powder and starch from banana stems, which were discarded as trash until recently. Also, the versatile cashew "apple" (part to which nut is attached) has been used to produce a tasty cordial, a squash-like food, pickle, jams, and a confection.

Another new food has been prepared from tapioca and groundnut. It is said to be 25% cheaper than rice but just as nutritive.—Food Eng, July, p193

Thermit Process Splices Hard-to-Splice Bars

Unable to splice reinforcing bars by lapping, the Corbetta Construction Co., Inc., came up with a unique solution of the problem. Reinforcement of the base slab of floating-box foundations for the Tappan Zee Bridge, N. Y., consists of several layers of 1¼-in. round and 2-in. square bars.

The large size of the bars and their close spacing required that they be spliced by welding. To avoid bringing in an expensive power system, Corbetta butt-welded the large bars by the Thermit process.

Bars were lined up with about ½-in. gap between ends. At each splice, two halves of a baked foundry-sand mold were clamped together around the bar ends. Welding compound was poured into the upper part of the mold. Starting thermite was put on top and ignited.

A thin steel disk at the bottom of the funnel kept the burning thermite from flowing prematurely into the gap. When the thermite was hot enough, the disk melted, permitting molten thermite to fill the gap.

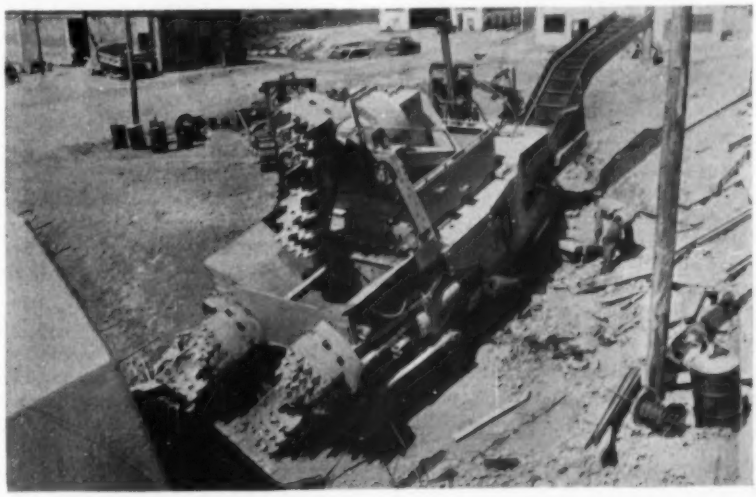
Vertical holes in the mold permitted gases to escape. After cooling, the mold was removed and discarded.—Eng News-Rec, July 9, p36

Product-Design Shorts

• **Spray-on plastic film,** developed by Eastern Industrial Service, Inc., can control ultraviolet and infrared rays. The new material, also available in sheet form, filters out 95% of ultraviolet rays and 80% of infrared rays.

• **Noncritical metal** containing 84% iron and 16% aluminum has magnetic characteristics that will make it useful in transformer cores and high-frequency equipment. U.S. Naval Ordnance Laboratory developed it, calls it 16-Alfenol.

• **Ultrasonics,** Mullard, Ltd., of England reports, aid the application of metallic coatings to other metals. For example, they lower surface tension and allow a smoother flow of aluminum over a steel surface.—Prod Eng, June p5

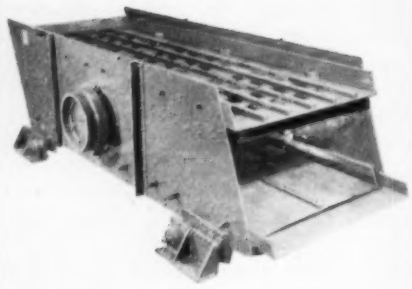


Machine Sinks Slopes Continuously

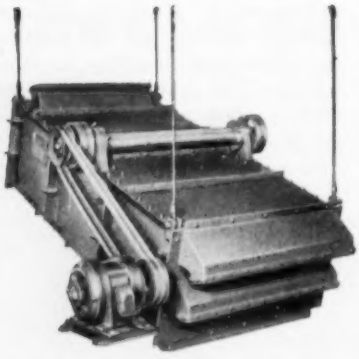
A continuous slope-sinking machine of the boring type went into operation at No. 22 mine of Jamison Coal & Coke Co., W. Va., early in June. Equipped with three cutting heads, the machine will make a 15x15-ft. opening and is expected to complete the 2,800-ft. slope in 9 to 14 mo. The 110-ton machine was developed by Kenneth M. Rodenbush, Wilbur Robbins, and Jamison Coal & Coke. The three revolving cutting heads are supplemented by chains to "square off" the sides, and the top and bottom, leaving an arched opening. All rotors and cutting chains are driven by a single 150-hp. motor, with smaller motors for the conveyor, the hydraulic pump, and the gathering head. Speed of advance in hard sandstone is expected to be 5 ft. per shift. Machine rests on shoes.—Coal Age, July, p81

A Solution for Every Screening Problem

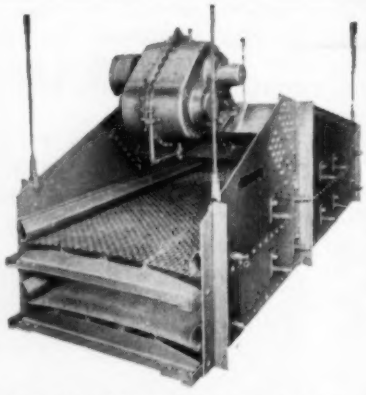
You can meet any screening need from the broad Allis-Chalmers line of vibrating screens. In addition, Allis-Chalmers builds the motors, drives and controls to operate them. It will pay to take advantage of this single source, single responsibility for screening equipment.



Ripl-Flo screen is a two-bearing, inclined type of vibrating screen for moderate to heavy-duty screening of fine to coarse materials. Available from 3' x 6' to 6' x 16'—1, 2, and 3 decks. Write for bulletin 6151B.



Aero-Vibe screen is a versatile, low-cost unit for sizing medium to fine materials. Has simple, two-bearing mechanism. Available in sizes from 2' x 4' to 5' x 10'—1 and 2 decks. Write for bulletin B6099.



Low-Head screen offers straight-line, horizontal operation to save headroom and space. For wet or dry screening, rinsing, dewatering of fine to coarse materials. Available in sizes 3' x 6' to 6' x 16'—1, 2, or 3 decks. Write for bulletin 6330.

Ripl-Flo, Aero-Vibe and *Low-Head* are Allis-Chalmers trademarks.

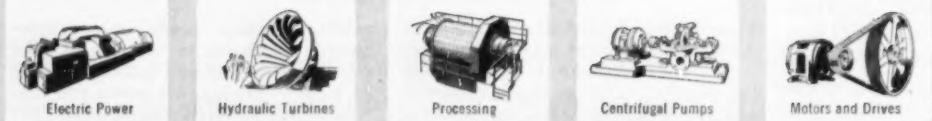
ALLIS-CHALMERS MANUFACTURING COMPANY
General Machinery Division, Export Department, Milwaukee 1, Wisconsin
Factories in U. S. A. and Canada

ALLIS-CHALMERS DISTRIBUTORS THROUGHOUT THE WORLD

ALGERIA—Alger.
ARGENTINA—Buenos Aires.
AUSTRALIA—Sydney.
AUSTRIA—Vienna.
BELGIUM—Brussels.
BOLIVIA—La Paz.
BRAZIL—Rio de Janeiro, São Paulo, Recife (Pernambuco), Porto Alegre.
BRITISH BORNEO—Sandakan.
CANADA—Montreal.
CHILE—Santiago.
COLOMBIA—Barranquilla, Bogota, Medellin, Cali.
COSTA RICA—San José.
CUBA—Havana.
DENMARK—Copenhagen.
DOMINICAN REPUBLIC—Ciudad Trujillo.
EL SALVADOR—San Salvador.
ENGLAND—London.
FINLAND—Helsinki.
FRANCE—Paris.
FRENCH MOROCCO—Casablanca.
GREECE—Athens.
GUATEMALA—Guatemala.
HAITI—Port-au-Prince.
HAWAII—Honolulu, Hilo.
ICELAND—Reykjavik.
INDIA—Bombay.
IRAQ—Baghdad.
ISRAEL—Tel-Aviv.
ITALY—Milan.
MALAYA—Kuala Lumpur, Ipoh, Kota Bharu, Penang.
MEXICO—Guadalajara, Mexico City Monterrey, Tijuana.
NETHERLANDS—Amsterdam, The Hague.
NEW ZEALAND—Wellington.
NICARAGUA—Managua.
NORWAY—Oslo.
PANAMA—Panama.
PERU—Lima.
PORTUGAL—Lisbon.
PUERTO RICO—Ponce, San Juan.
REPUBLIC OF INDONESIA—Djakarta, Surabaja.
REPUBLIC OF THE PHILIPPINES—Manila.
SARAWAK—Kuching.
SINGAPORE—Singapore.
SPAIN—Madrid.
SURINAM—Paramaribo, Nieuw-Nickerie.
SWEDEN—Stockholm.
SWITZERLAND—Zurich.
THAILAND—Bangkok.
TUNISIA—Tunis.
TURKEY—Istanbul.
UNION OF SOUTH AFRICA—Johannesburg.
URUGUAY—Montevideo.
VENEZUELA—Caracas.

C-5696

Machinery and Equipment to Help People Produce More, Have More—Live Better!



ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Fine-Finish Tumbling

Proper control of abrasive, water, and additives, plus development of a method of sliding work over the abrasive, add up to precision tumbling

TUMBLING is not a new metalworking process. It has been in use to produce finishes more than a hundred years. But modern precision tumbling has little kinship with the old methods.

The old methods provided little abrading action, allowed no close-tolerance work, and produced no fine finishes. But modern tumbling, such as the Slidabrading method developed by Westinghouse Electric Corp., can produce fine finishes on both ferrous and nonferrous parts.

In Slidabrading, tumbling-barrel speed, abrasive type and size, and the amount and kind of compound or other additives are closely controlled. Also, parts are always supported and do not normally drop from the top of the barrel during rotation.

The abrading action is concentrated on exposed edges. The material removed varies with the sharpness and relative exposure of the edges. On flat surfaces, little material is removed but surface roughness is reduced. Either material removal or alteration of surface roughness can be controlled accurately.

Slidabrading can remove burrs, apply a radius to edges, or polish the surfaces on a great variety of parts. Abrasives and workpieces slide across the top of the mass in a thin layer when the barrel rotates; this action allows fragile parts to be processed as well as heavy sections. Westinghouse is applying the method to breaker parts for switchboxes and transformers, jet-engine components, contacts, and many switchgear, motor and household-refrigerator parts.

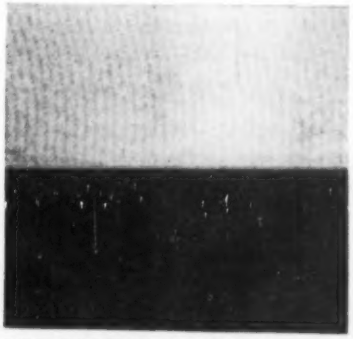
Type and size of abrasive must be selected with care. Nearly all parts that can withstand the weight can be tumbled most quickly with aluminum oxide. A rubber chip filled with abrasive grain is suitable for parts requiring a lightweight mass of abrasive. Wooden balls and ground ivory nut are available for fine burnishing and polishing.

Abrasive size depends on finish desired and workpiece shape. Large abrasive particles act more quickly but produce rougher finishes than smaller abrasive. If the workpiece has prongs, holes, or cavities, the abrasive must be small enough that it does not become lodged in such recesses.

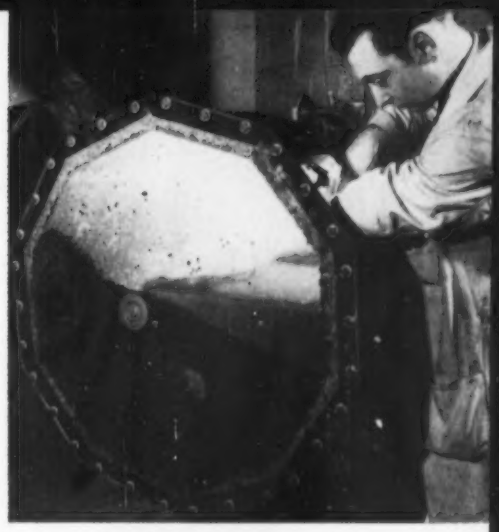
When parts have heavy outside burrs, as well as small burrs around holes, a combination of large and small chips works best. The large chips remove the outside burrs rapidly, while the small chips pass through the holes and remove the small burrs around the edges.

Under normal conditions, the load (parts plus abrasive) should fill the barrel about 60% full. The weight ratio of parts to abrasive should be one to three or four. Less abrasive may be used with heavy, bulky parts.

When fragile parts are to be tumbled, the barrel may be filled to 75% full and a smaller abrasive used to reduce movement of the mass and to support the work better. Such parts should be loaded in layers, alternating work and abrasive.



TWO BLOCKS (actual size) were both surface ground; then the bottom block was Slidabraded to fine finish



EXPERIMENTAL BARREL has glass front to show how work slides over abrasive rather than dropping

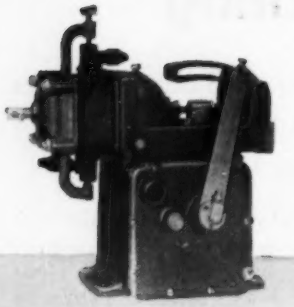
Water is usually added to prevent the abrasive from loading, to keep parts clean, and to provide some lubricating action. With aluminum-oxide abrasive, the water level is kept slightly below the level of the mass. When there is no foam problem, as with rock chips, the level is usually 2 in. above the mass. Less water speeds cutting but gives a rougher finish.

With iron or steel parts, adding sodium carbonate or trisodium phosphate softens the water, retards rusting, improves chip cleaning. Adding burnishing compounds gives a high luster and smooth finish. Burnishing soap (½% by weight of abrasive) replaces nearly all cutting with a polishing action.

Tumbling-barrel speeds range from 80 to 200 ft. per min., or 10 to 25 rpm. with a 32-in. barrel. The speed should be set so that parts, when they reach the top of the barrel, turn over and slide gently over the medium instead of dropping. Barrel can be either hexagonal or octagonal in shape and may have from one to six compartments.

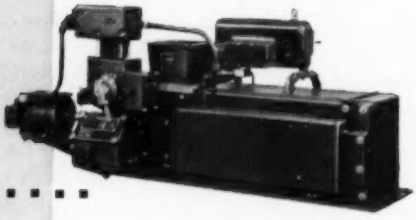
Speeds and tumbling time depend also on the material. Soft metals—copper, brass, aluminum, magnesium—can be abraded in a fraction of the time required for iron and steel. About 1 hr. is needed to deburr small stampings, screw-machine parts, and similar items.—Am Mach, July 6, p113

here is...



dependability for

every
FLUORIDATION PROBLEM .....



In 1945 three controlled fluoridation studies were initiated in the United States and Canada. Two of these installations — Newburgh, N. Y., and Brantford, Ontario — were equipped with Wallace and Tiernan Fluoridators.

Since that time Wallace & Tiernan has continued to develop a complete line of Fluoridators and accessory equipment. Into this development have gone the experience, precision manufacturing technique and research which helped devise Chemical Feeders of all types in the past forty years.

An indication of the present world leadership of W&T Fluoridators is the hundreds of W&T Fluoridation installations now operating or in preparation. Whether the daily water consumption of your community is hundreds or millions of gallons, there is a W&T Fluoridator to meet your fluoridation requirements.

When you consider fluoridation, communicate with Wallace & Tiernan. There's no obligation.

WALLACE & TIERNAN PRODUCTS FOR COMMERCE, INDUSTRY AND THE COMMUNITY

Ammonia Control Apparatus—Cathodic Protection Systems—Chlorinators—Chemical Feeders—Decay Control Processes for Produce—Electric Marine Beacons—Flour Processing Chemicals—Magnetic Separators—Pharmaceuticals—Precision Instruments—Sifters. F-95

AGENTS IN MOST COUNTRIES

WALLACE & TIERNAN CO., INC.

NEWARK 1, NEW JERSEY, U. S. A.

Africa: A Study

Twentieth Century Fund makes Africa a research project. Its aim: better understanding

AFRICA has economic and strategic importance to America and the rest of the world. But there still is a general ignorance of the geography, economics, and social problems of the African people, particularly those in tropical Africa near the Equator.

The Twentieth Century Fund, an independent research organization, wants to dispel some of the ignorance. To achieve its aim, the fund is putting up more than $100,000 for a 3-year research project to analyze the geography, economics, social anthropology, and government of Africa. Main hope of the fund is that the research will provide a book of interest to the layman.

A preliminary study of the continent indicates it is not the Mediterranean Sea that separates the culture and problems of Africans from those of the rest of the world. It is the Sahara Desert that is the line of demarcation. So the fund believes its money can be better spent by concentrating on the area south of the Sahara. This area looks within itself rather than abroad for its culture.

For the same reasons that northern Africa is to be treated lightly by the project, the Union of South Africa will probably get a quick study.

A problem that the fund still has to solve is what to do about the independent nations such as Ethiopia and Liberia. These countries certainly may offer a clue as to the directions the African colonies would take if they gain independence. Yet the problems and life in self-governing countries obviously differ from those in the colonies.

A final book is not the only thing that the fund wants to get from the project. There are hopes that an accurate atlas of African resources, social movements, and other factors may be prepared.—Business Wk, June 21, p154

What To Know When You Try Textile Fungicides

When you consider treating your product with a fungicide, you should check these properties:

Stability of a fungicide is determined by resistance to heat, light, ultra-violet rays, and oxidizing agents. Very few chemical compounds possess all these characteristics. The fungicide must be stable as a compound and also when applied to the fabric.

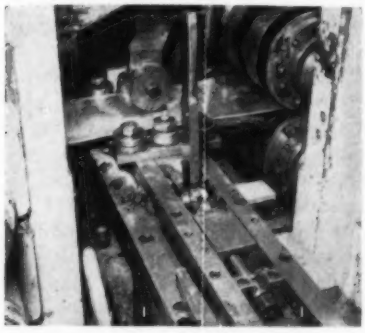
Efficacy may be either fungistatic or fungicidal. A large number of products possess good fungistatic qualities; they prevent the germination of fungus spores. Those that are fungicidal actually destroy the spores before they can germinate. The chosen compound must be effective in relatively small amounts.

Toxicity must be of an extreme low order. The manufacturer must be sure that his fungicide meets low toxicity requirements.

Color of the fungicide must not discolor the treated material. Dye adjustments can overcome any color changes.

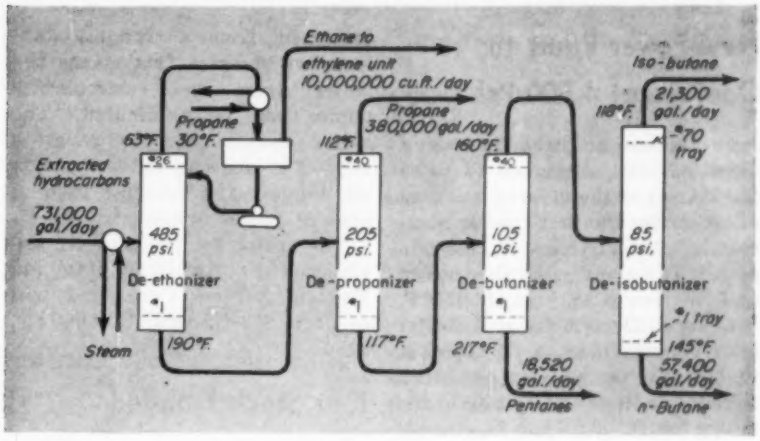
Odor must not be unpleasant, particularly if it is used in wearing apparel.

Hand must not be significantly changed by the fungicide, especially if the fabric is to be used in the manufacture of wearing apparel.—Textile World, July, p 137



Rolls Burr Edges

Before strip is roll-formed at Douglas Aircraft Co., four two-stage rolls form radii on edges and eliminate hand burring. Two lever-adjusted rolls are on each side of the strip. As roll burring is combined with forming operation, it is done at no additional cost.—Am Mach, May 25, p129



Fractionation Unit—One Step To Speed . . .

Natural Gas to Ethylene

Petrochemical industry in the U. S. is doubling itself every 5 years. Ethylene is gaining greater prominence as part of this astounding growth industry

ETHYLENE CONSUMPTION has enjoyed tremendous growth in the last decade. From it have come synthetic ethanol, ethyl chloride, ethylene glycol, exthylene oxide, and polyethylene.

This surge in growth has encouraged the use of natural gas as a source of feed stock. By 1975, one authority estimates, 40% of the ethylene will be derived from natural gas.

These factors led National Petro-Chemicals Corp. to locate its new ethylene plant on a natural-gas transmission line as a source of ethane or propane for cracking to ethylene. The plant, at Tuscola, Ill., can process 425-million cu. ft. of gas per day to extract 10-million cu. ft. of ethane per day for cracking. Ethylene thus produced is synthesized to produce each year 400-million gal. of ethanol and 50-million lb. of ethyl chloride.

Natural gas is run through the extraction unit—a light-oil and heavy-oil absorption system. The gas is dehydrated, cooled by exchange and propane refrigeration to −20° F., and passed through the absorbers.

Lean light oil and liquefied petroleum gas (LPG) are separated in stills, with the LPG then going to the fractionation unit. Stripped gas from the heavy-oil absorbers is returned to the gas pipeline.

The fractionation unit separates the liquid hydrocarbons in a series of four towers. Cold feed, preheated to 125° F., is fed to the 26-tray de-ethanizer tower. Part of the overhead is condensed by propane refrigerant for reflux purposes. Ethane, as a vapor, is sent to the ethylene unit.

The bottoms pass to the 40-tray de-propanizer tower for separation of propane of 96% purity. De-propanizer bottoms go to the de-butanizer tower, which separates the butanes from the natural gasoline with the latter stream passing to storage. The butane fraction is separated in the de-isobutanizer tower to iso-butane and normal butane.

At the ethylene unit, ethane is cracked at high temperature and low pressure to produce ethylene and hydrogen. Part of the ethylene is made into the alcohol by reaction with sulfuric acid; the remainder of the ethylene is reacted with hydrochloric acid to make ethyl chloride.—Pet Proc, June, p897

New Power Plant to Operate at 4,500 Psi.

A new boiler and turbo-generating plant has been designed to cross the barrier of the critical pressure of steam for the first time in commercial production of electric power. The plant will utilize steam at 4,500 lb. per sq. in. and 1150°F.

General Electric Co. will design and manufacture a 120,000-kw. turbine for the project. Babcock & Wilcox will design and build the boiler for it. At 4,500 lb. per sq. in., the turbine will be operating at almost double the present highest steam pressure used for power generation.

The initial steam temperature of 1150°F., used in the new boiler, will be 50° above the current high and will be followed by two stages of reheat—the first at 1050°F. and the second at 1000°F. The boiler will be the "once-through" universal-pressure type in which water at 5,500 lb. per sq. in. changes into super-heated steam in a single passage through water tubes.

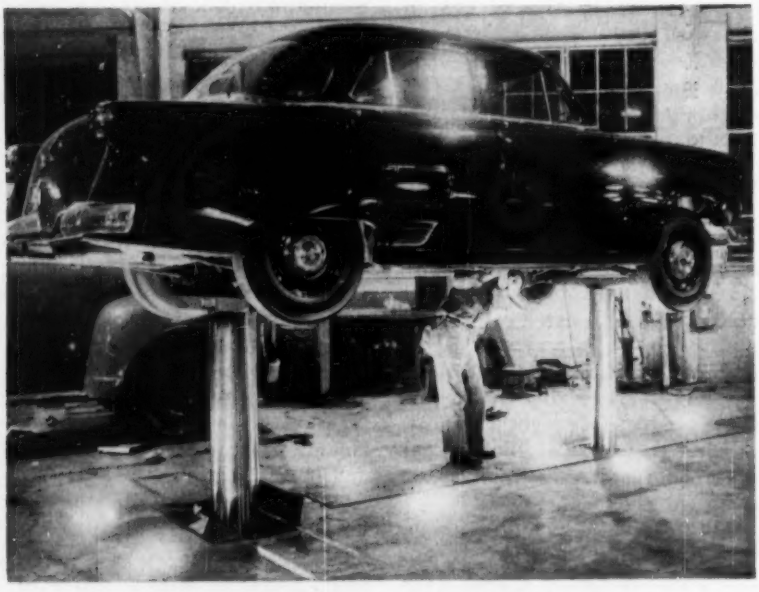
There will be no intermediate stage of water "bubbling" in the new boiler. Water will pass immediately from a tranquil state into live steam. This means the boiler drum and recirculating pumps can be eliminated. The boiler drum, used to separate bubbles of steam from the water, is the biggest and heaviest item in present power plants.

The entire project is being engineered by American Gas and Electric Service Corp. and will cost over $12-million.—Power, July, p150

Flat Stock Flanged

A Dutch firm making cartridge-fuse contacts folded flat copper strip together and bent a flange at right angles to each side of the body. But when the contact was plated, corrosion would be started by acid from the acid dip being trapped in the groove formed by the fold.

A new method avoids corrosion by doing away with the fold. A copper blank of body thickness is split partially at one end by being forced in a punch press vertically over a knife-shaped tool. Flanges are then bent to the 90° angle to the body. Trimming and piercing follow.—Mach, June 13, p955



Better Lift Lighting for Mechanics

Flush lights, mounted in floor of garage, solved problem of lighting underside of cars on the repair shop lift. The eight units use impact resisting glass to protect lights and are placed at intervals of 5 ft. 4 in. Rows are 3 ft. apart. Lamps are 100 w. to give even lighting with low brightness level.—Elec World, June 15, p152

Return to Competition Means More New Products

The number of new industrial products to be introduced next spring has been building up for a long time. The reason is much stiffer competition in sales of equipment for production, materials handling, and maintenance after the new year. To meet it, manufacturers will release products that claim better design, more exacting engineering, and lower operating costs.

The products that will turn up next spring will not completely stun you. About half can be classed as innovations. They will fit into niches that have been vacant for a long time.

The other half will be extensions of manufacturer's current lines. Most will have refinements, though, that promise more efficient operation and cost cutting, the kind of features that customers want in a competitive period. A few will have eye appeal, but not much else.

Some producers are cutting a lot of nonstandard products from their lines. By standardizing, they explain, it is easier to sell just one or a couple of items.—Business Wk, May 30, p52

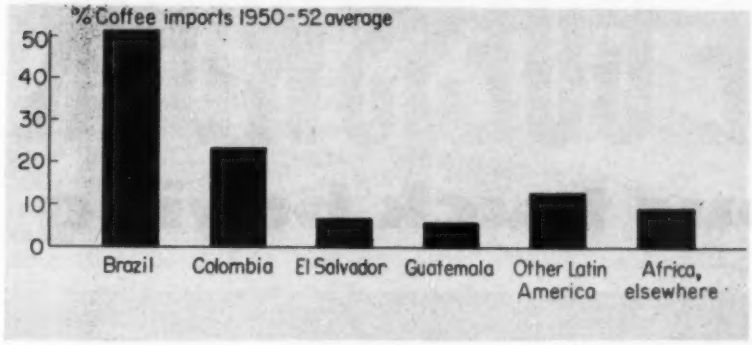
Farm-Product Research

Farm commodities may be put to new and gainful uses as a result of the U. S. Department of Agriculture's research. Here are a few of the ideas:

- **All-climate spread** gets around phase separation in butter and margarine. It contains vegetable oils, monoglycerides, vitamins, flavoring, and surface-active agents. It spreads from 0° F.
- **Four main types** of modified cottons have been developed —water-soluble (for basting thread); flame-proof; heat-resistant (for ironing-board covers); two-way stretch (for elastic bandages).
- **Potato use** may be increased by improved dehydrated mashed potatoes and a compact bar of compressed potato chips for military rations.—Chem Wk, July 11, p36

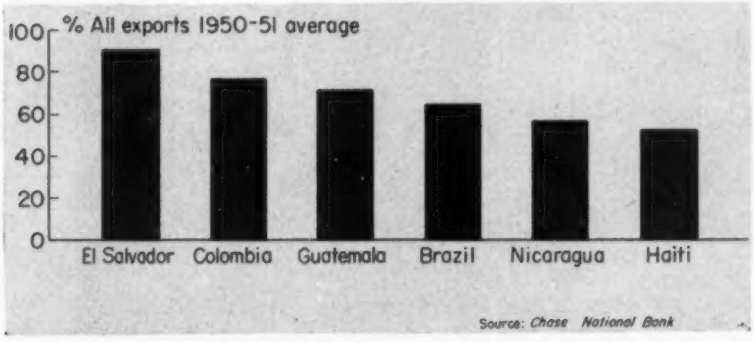
U. S. Coffee Buying—

20-million bags a year breaks down like this



For These Countries—

Coffee sales are more than half of all export income



Coffee, Key to Economy?

In a fluctuating market, too many countries may depend primarily on coffee exports for the lifeblood of their economies. But some bright spots appear

NEVER BEFORE was coffee so important to Latin America as it is today. And that is true despite new developments in other raw materials—iron ore, oil, metals.

It is a situation that worries some of the experts. Recently, the Chase National Bank of the City of New York took a long look at coffee economics in its quarterly *Latin American Business Highlights.*

The signs seem to point toward a period of stability in the coffee market. But Chase wonders about the large industrial structure that is being built under forced draft in Latin America—all balanced delicately on the narrow base of coffee exports.

Coffee has always been Latin America's money crop, but its high price boosts its relative importance today to an all-time high. Last year, coffee brought in nearly one-quarter of the continent's trade earnings. And that is an over-all figure. Chase underlines the fact that for some countries, coffee is the whole economy.

Fortunately, Chase economists see a more stable coffee market than existed prior to the war. They figure demand is rising. U. S. per capita consumption is high and is likely to go still higher.

But there is a warning in the Chase study—for Latin Americans as well as U. S. businessmen. Price fluctuations are likely to be wide in the future; and a business dip in the U. S.—which would surely show up in lower coffee prices—would mean severe belt-tightening, if not economic chaos for coffee producers.

Chase adds that some of the coffee countries have spent their earnings to import machinery and equipment, expanding home industry and thus lifting living standards. But they have done precious little to spread the risk and develop other exportable goods.

Now another shadow just barely looms on the horizon. Africa's sales to the U. S. have soared—up from 2% of U. S. coffee imports to over 5%. For the first time, Latin Americans may be finding themselves face-to-face with serious competition in world markets.—Business Wk, July 4, p96

More American Autos Will Steer With Power

Ford Motor Co. has just adopted power steering on its V-8 passenger cars. The linkage-booster-type unit is supplied by Bendix and has a suggested list price of $134.

A 3½-lb. pull on steering wheel is required before power steering takes over at cruising speeds.

General Motors Corp's first new linkage-type power steering unit is expected to appear shortly, probably on Hudson.

Chrysler Corp. is tooling its Trenton, Mich., engine plant for production of its own power steering unit, which is said to be simpler than the one Chrysler is now using. It will be of the "full-time" type.

Dodge and Plymouth are expected to use a linkage-type power assist on their next year's models.

Nash is reportedly planning to offer power steering on its Statesman models shortly. It wll probably be supplied by Monroe Auto Equipment Co.

Studebaker wll soon be using hydraulic power steering supplied by General Motors.—Auto Ind, July 1, p35

TAKE THE GUESSWORK

out of your truck buying

International performance is proved 3 ways

Be sure of the truck performance you want at the lowest cost. These new Internationals give you value with a capital "IH" because they're proved 3 ways:

1. **Proved BEFORE They're Built**—at the world's most advanced all-truck engineering laboratory. That results in longer truck life, reduced operating and maintenance cost. You get *more* truck for your money.

2. **Proved AFTER They're Built**—at a 4000-acre proving ground in the desert and mountains of the state of Arizona. Economy and stamina are assured after tests under these most difficult conditions on the toughest proving ground in America.

3. **Proved in SERVICE**—by cost-conscious truck operators throughout the world. Every new International is built on engineering principles that have kept International the heavy-duty sales leader for 21 straight years.

See the new Internationals. Compare, drive them. Ask your International Truck distributor for all the facts.

INTERNATIONAL HARVESTER EXPORT COMPANY

World-wide distributor of products manufactured by the International Harvester Company in the U.S.A. and by affiliated subsidiaries in Canada, the United Kingdom, France, Germany, Sweden, Mexico and Australia.

180 NORTH MICHIGAN AVENUE • CHICAGO 1, U. S. A.

INTERNATIONAL IH TRUCKS

Better Living through Better Roads

TECHNICAL SHORTS

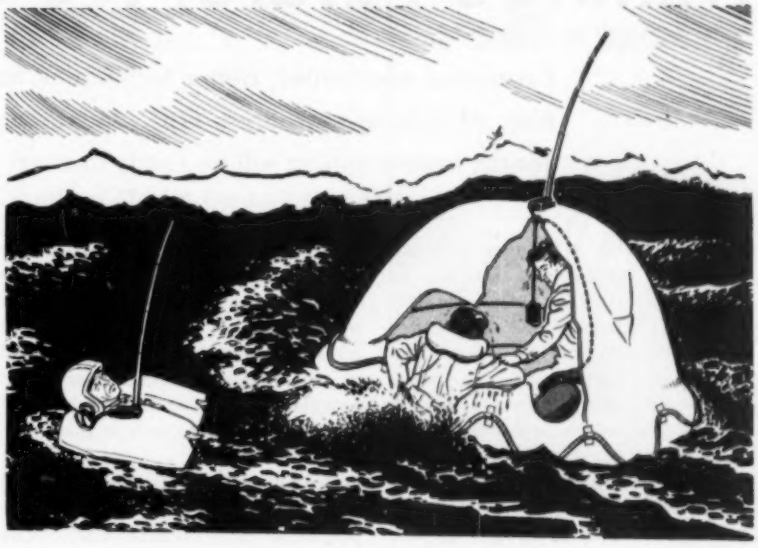
Aids Carbonizing Wool—Heavy glass-fiber fabric proved its merits as a "leader" in woolen carbonizing for one textile mill. Fabric may be left on the rollers and in the acid bath indefinitely. Glass-fiber cloth fastened to leading end of a new run of woolen fabric leads wool goods through the acid tank.—Textile World, July, p172

Water Economy—Double use of drinking water will soon be a reality in New York State. To utilize reservoir water before it gets to drinking faucets in New York City, two utilities have been given rights to build two generation plants in Grahamsville, N. Y., and to use water power in the rerouted N. Y. reservoir system to spin turbines. —Elec World, June 1, p78

Spare the Ice—The relatively high temperature range of 60 to 65°F. has been found best for maintaining quality of tomatoes that are ripened after harvest. Shippers are advised to use less ice for tomatoes than the amount required for other fruit.—Food Eng, July, p190

Flame-cut Skeg—Bethlehem Pacific's San Francisco shipyard recently made a new 20-ton skeg for Navy oiler USNS Kennebec by flame cutting. Gross outline was cut by machine from 30-in. x 30-in. x 17-ft. block and finished by flame gouging. Job was completed in 3 weeks. Skeg is stronger than cast one.—Marine Eng, June, p124

More Aluminum—Continuous electrolytic process, announced by Lobeth Corp., can produce alumina from low-grade clays and could make the U. S. independent of foreign bauxite. The clay is roasted to remove moisture, then put through a combination acid and electrolytic process. Cost is claimed to be 15 to 20% cheaper than the Bayer process now used. —Iron Age, May 28, p64



Rescue Beacon Saves Crash Victims

Two versions of a new homing device, shown on the Mae West life jacket above and in the raft, should save many aircraft survivors that might otherwise be lost. Device sends out signals through whip antenna to homing device in search planes. Regardless of the weather and time of day, the rescue ship can follow the beam.—Aviation Wk, July 6, p21

Glass-lined Stack—A. O. Smith Corp. has just made the first glass-lined smoke stack and erected it at the company's power house for field test. The 44-ft.-long, 6-ft.-dia. section has two glass linings bonded together by 1600° F. temperature.—Ceramic Ind, July, p33 and 35

Oil-shale Chemicals—Improved retorting method, developed by U. S. Bureau of Mines, extracts aromatic and olefinic chemical by-products from oil shale as well as gasoline and oil products. Process is continuous and can be varied to control product type and quality.—Pet Proc, May, p627

Smoke Trouble—If your hand-fired furnace stacks are pouring out smoke, have your firemen switch to side firing. Right and left sides are fired alternately so one half is always hot and in condition to burn the gases given off by the other side.—Mach, May 16, p791

For Schools: Better Design—New York City plans to spend $100-million on its school system in 1954. And it wants the most for its money. So the school-system's architect has worked out a method of building standardized block units. He feels standardized construction to meet standardized needs saves money. Idea is to make a school by combining units to fit the site or to conform to special needs of the school. Units would be standard, varying only in their placement in the total structure.—Eng News-Rec, July 9, p44

Infrared Soldering—For jobs where there are glass-metal components to be joined closely and a soldering iron tends to crack the glass, try a bank of 500-watt infrared bulbs. Two above and two below the work can be regulated to apply heat gradually. Work can be put on asbestos jigs and more than one unit soldered at the same time.—Electronics, July, p263

New Frontiers

Mining's Future: It's Bright

Expanded economies, better techniques, new processes keynote the beginning of mining's greatest era. Money poured into new projects and research means mining will be ready to meet any challenge

METALS AND MINERALS MINING can look forward to an era of great opportunity and growth. For one thing, there has never been a time in the history of mining when so great an investment was being made all over the world in new mining enterprises and in expansion of old ones. New projects are springing up everywhere, and investment runs into billions of dollars. Here is an idea of how mining's new era shapes up in . . .

. . . New Metals

In the near future, the newer metals will fill an important role as supplements to the world's metal supply. Except for titanium, none should approach major tonnage production. But they will help metallurgy meet the new and more severe demands of an age of supersonic speeds and nuclear energy.

Properties of the potentially useful new metals, including titanium and zirconium, may mean higher prices than those of the older metals. But in titanium you can expect tonnage production approaching those of the copper-lead-zinc group.

Zirconium should reach only a moderate tonnage role in alloying and corrosion resistance. Columbium, tantalum, beryllium, hafnium, and rhenium are restricted by supply limitations, as well as difficult technology.

Of the rare earths, thorium will probably be unavailable because of atomic-energy requirements. Only cerium and lanthanum can have significant production.

As a group, the alkali and alkaline earths have little resistance to oxidation. That eliminates their use in massive form or as alloy bases. If a protective method could be developed, calcium metal might challenge the other light metals because of its good mechanical properties, very low density, and abundance.

Silicon, boron, germanium, and gallium also appear to have no potential use structurally. The future of silicon and boron in metallurgy lies in alloying, and in oxidation- and abrasion-resistance compounds and coatings. Germanium and silicon will be useful in small quantities because of their semi-conductive applications. Gallium at present shows no important future.—Eng & Min J, July, p94

. . . Iron Ore

Demand for steel will increase with every successive decade to supply needs of growing population and the rising level of industrial activity. Iron-ore supply must meet the goal established by the prospective steel demand.

Projects are underway or completed throughout the world. Their purpose is to provide the necessary iron ore. In the U.S. and Canada, 16 companies plan 27 projects that will eventually bring in 44,360,000 tons of ore and concentrate each year.

Latin America, Europe, and Africa have their plans. Latin America expects to be shipping better than 5-million tons a year soon. In Europe, mines in Sweden, Norway, Finland, Lorraine, and Yugoslavia set their goal at more than 90-million tons of ore and concentrate per year. In Africa, one company expects to be mining 1½-million tons of ore per year this year.—Eng & Min J, July, p100

. . . Titanium

Feverish research campaigns now underway by government and industry to cut production costs of titanium metal and sponge rule out any short-range outlook for the metal. Price alone will tell how soon consumption will rise from a few thousand tons per year to hundreds of thousands of tons. This huge potential demand is spurring many factors in the industry to develop the "cheapest production method the fastest."

Nowhere in the titanium industry today does one detect any serious concern about the future supply of ilmenite. Huge reserves have been discovered in Canada. Reserves in North America, extending from Florida to Labrador, appear to be completely ample to support a fast growing titanium industry even if requirements for ilmenite for metal and pigment production run into millions of tons per year.—Eng & Min J, July, p142

. . . Copper

Although copper consumption by 1963 will run well beyond 1953's level, consumers need fear no shortage. New copper projects in the U.S., Canada, South America, Africa, and Australia will help catch up with world demand.

New projects in Canada and the

U.S. will add 374,000 tons of copper per year to the world's supply. South America's, Africa's and Australia's output will total 490,000 tons of copper per year in the near future. Largest will be Chile Copper Co.'s project at Chuquicamata, Chile. Its output will be 250,000 tons a year.—Eng & Min J, July, p110

. . . Lead and Zinc

Lead and zinc consumption is closely related to that of steel. And steel consumption is on the way up. So the lead and zinc future is bound to be bright.

Where will the future new markets for lead and zinc lie? One answer is the growth industries. For instance, the plastic industry absorbs considerable quantities of lead compounds. And plastics is a small part of the chemical industry, which is now expanding at a tremendous rate.

Atomic energy forms the basis for another growth industry. Lead is shielding reactors and isotopes for shipment. It may yet be used as a liquid coolant.

A new high-voltage, low-energy battery gets its power from isotope radiation. But it must be shielded, and lead is the material.

For zinc, renewed interest in anodic protection of metals offers an attractive market.—Eng & Min J, July, p130

. . . Aluminum

I. W. Wilson, president, Aluminum Co. of America, has this to say about aluminum's future: "A careful study of existing market trends indicates that aluminum will rise to new heights of usefulness in many fields. Among the uses that hold great future promise as large-tonnage consumers are: electrical conductors; building and architecture; automotive and air transportation; and chemical processing equipment. And there are many additional fields that will require large quantities of this light metal for new developments."

Free-world aluminum producers are sure of aluminum's future. By 1955 they plan to be producing 2,805,000 tons per year. That compares with 1939's output of 693,000 tons. Bauxite, from which aluminum is refined, is plentiful. Estimated world reserves total 1.6-billion tons. But cryolite, necessary in aluminum reduction, is scarce. Producers plan on making a synthetic, and three plants already reclaim cryolite from potlinings.

It takes 10 kw.-hr. to produce 1 lb. of aluminum. In the future, though, electricity needed should be cut to 6.4 or 6.8 kw.-hr.

What may be a new trend for the industry is shaping up at Reynolds Metals Co.'s Arkansas plant. Fabricast Div. of General Motors Corp. has located nearby. It will absorb one-fifth of Reynolds' plant output in making die-castings. Molten aluminum will be shipped in insulated trucks from the reduction plant to Fabricast's casting plant. It means saving Fabricast $200,000 a year in metal handling.—Eng & Min J, July, p120

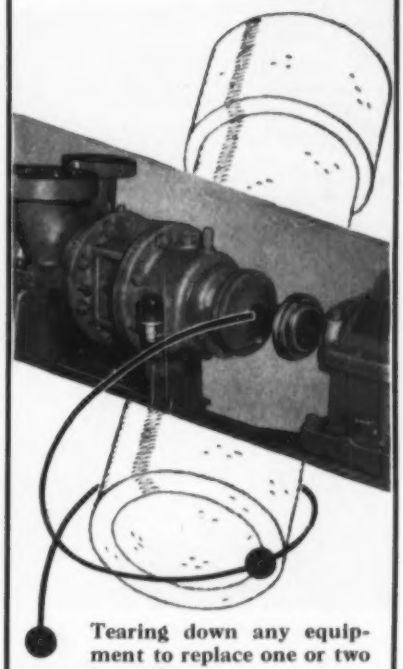
. . . Uranium

Uranium's future depends on two developments: (1) continued requirements for a stockpile of weapons to guarantee non-aggression in the free world and (2) gradual conversion of uranium use to the production of atomic power as stockpile goals are met.

According to U.S. Atomic Energy Commissioner Henry D. Smyth, the world uranium program will not collapse once the need for weapons slackens. He says, "It is my own belief that the use of uranium for power purposes will become economically feasible before the need for uranium for military purposes begins to slack off. Therefore, I believe that there is going to be a continuing demand for uranium."

Just recently, the AEC released four reports of studies made by industry teams on the feasibility of atomic-power generation (McG-H Digest, Aug, p34). The reports were encouraging. But this one drawback is evident: atomic power cannot yet compete economically with orthodox systems. In the years to come, however, developments are sure to bring the cost of atomic power down to competitive levels.—Eng & Min J, July, p138

DELORO STELLITE stops wear-worry



Tearing down any equipment to replace one or two parts is costly.

That is why pump manufacturers world renowned for quality, commonly use stainless steel to resist corrosion or high temperature but choose *Deloro Stellite* to protect shafts, sleeves and other critical parts against added wear from abrasion. It keeps pumps running from 300% to 1000% longer between overhauls.

Learn how Deloro Stellite, cobalt chrome tungsten alloy, will keep your equipment operating many times longer. Write for booklet: B.9e.

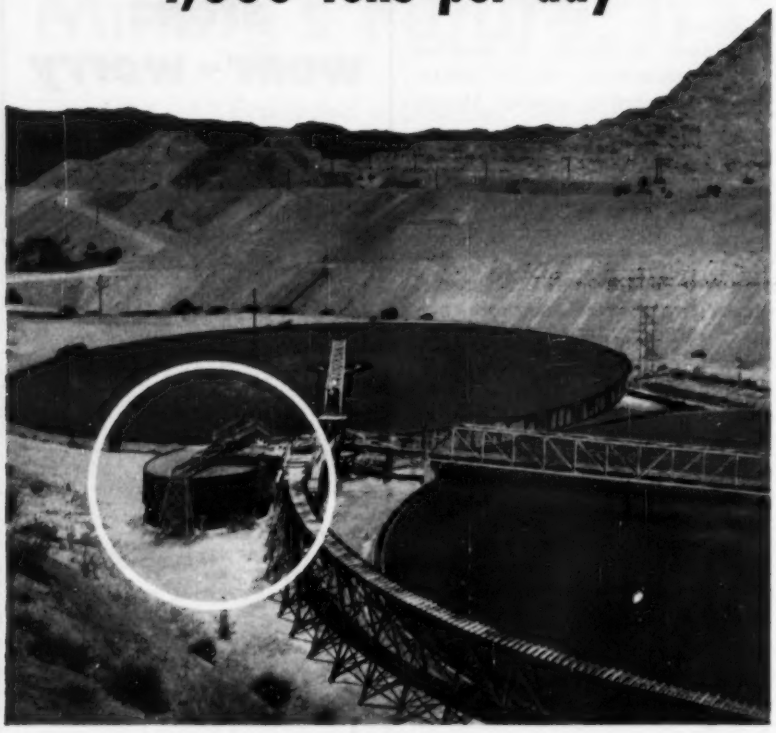
Two factories to serve you:

DELORO SMELTING & REFINING COMPANY LIMITED
DELORO • ONTARIO • CANADA

DELORO STELLITE LTD.
SHIRLEY • BIRMINGHAM • ENGLAND

Agents throughout the world.

This midget boosts the GIANTS' capacity 1,000 tons per day



This large thickener installation was set up to handle copper flotation tailings at 26% solids. Then, mill tonnage was increased and ore characteristics changed.

PROBLEM: To enable the existing installation of two 225′ dia. Dorr Torq Thickeners to handle the increased load.

SOLUTION: A 30′ dia. Dorr Hydroseparator installed ahead of the thickeners removes coarse oversize from the tailings. The resulting improvement in plant efficiency *increased* mill output an average of 1,000 tons per day. Water lost in thickener underflow *decreased* by 166 gallons per minute.

Whenever a process involves the separation of finely divided solids in suspension, the use of ion-exchange, or fluidizing techniques, Dorr and its Associated Companies throughout the world can provide the correct equipment for your job. THE DORR COMPANY, Barry Place, Stamford, Conn.

"Torq" is a trademark of The Dorr Co., Reg. U.S. Pat. Off.

Better tools TODAY to meet tomorrow's demand

DORR

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Offices, Associated Companies or Representatives in principal cities of the world.

Unique Cantilevers Built for Concrete Hangar

British engineers are building a unique airplane maintenance plant entirely of reinforced concrete for the British Overseas Airways Corp. at London Airport. Principal structural feature consists of the eight 75-ft. cantilevers, two for each hangar opening.

Each pair of cantilevers carries a 150-ft. central opening. The 1,000-ton cantilever counterweights on the outside of the 66-ft. high pylons at each side of the hangar entrance were filled in steps during construction to keep the loading on the pylons centralized. The hangars themselves are 144-ft. deep.

Space trusses — triangular in cross-section—are made of reinforced concrete and form the roof for the building. Glazing is done directly into the concrete. Additional transverse beams along the center line of hangar roof trusses aid in distributing the load of four cranes in each hangar.—Eng News-Rec, May 28, p68

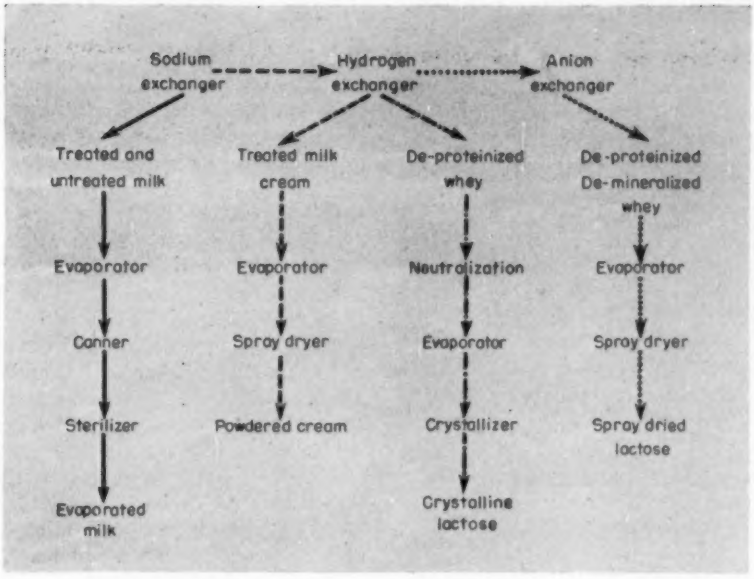
Hard-Top Concrete Ends Plant's Floor Troubles

Bridgeport Brass Co. really had a floor problem before it standardized on a special hard-top concrete floor. Concrete dust caused many rejects and ruined machine tools. Maintenance costs were high, and jolts and vibrations from the old floor led to frequent breakdown of equipment and machines.

The company picked a two-layer granolithic-type concrete floor as the solution. This floor type has a separate base slab and a ¾-in. to 1-in. hard-top wearing course designed for heavy-duty service.

Proper maintenance, Bridgeport Brass thinks, is important to keep the new floor up to standard. Each operating foreman checks his section of the floor. Any trouble he reports is fixed immediately. Floors in certain departments are scraped continuously every day to prevent build-up of deposits.

Foremen have the responsibility to report when their floors need washing. Bridgeport Brass has no regular washing schedule.—Factory, June, p102



Dairy Products Improve

Ion exchanger makes possible special dried and heat-stable evaporated milks and new "instant" dried creams that disperse quickly in hot coffee

NEW PROCESSES shown above change chemical and physical properties of milk. The numerous ionizable compounds in milk make it an easy product to alter with ion exchangers, working with types of newer resinous ion-exchange materials. Stabilized evaporated milk, lactose, special milk powders, and quickly dispensible stable cream powder are some of the dairy products that can be produced.

Both cation and anion exchangers may be used, depending on the end-product desired. A portion of certain mineral elements of the milk may be removed and other ions substituted, or the product may be completely demineralized.

Using the ion-exchange process, evaporated milk can be made heat stable easily. To do this, a small quantity of milk is passed through a cation exchanger acting in the sodium cycle where a portion of the calcium is taken out. The treated milk is then returned to the batch, condensed, canned, and sterilized. The process results in heat stabilizing the concentrated milk without adding chemicals.

For making dried creams that are stable in hot coffee, defatted milk is treated with a cation-exchanger material active in the sodium cycle and then with one active in the hydrogen cycle. The treated milk is blended with high-fat cream, and the whole is condensed and spray dried.

Recovery of lactose from de-proteinized whey is accomplished by first treating the whey with cation-exchanger material acting in the hydrogen cycle and later with an anion-exchanger material. The double treatment almost completely demineralizes the whey, which is then condensed and spray-dried. Almost all the lactose in high-grade form can be recovered with this process.

Another method for recovering lactose from whey, before or after de-proteinization, uses a cation exchanger in either the hydrogen, the sodium or the mixed hydrogen-sodium cycle. Almost all the calcium and magnesium are removed, and the mineral anions turned into soluble salts or acids. Where it is necessary, de-proteinization is then carried out.

If the exchange-treated whey is highly acid, the acid is partly neutralized with alkali to convert it to soluble salts. But no attempt is made to demineralize it completely. The product is then condensed, the lactose crystalized in the usual way.—Food Eng, July, p61

Training Program Makes Loomfixers Out of Novices

Henderson Cotton Mills, N. C., is training 11 men with no textile experience to become loomfixers on 224 looms now being installed. The men were carefully screened for qualifications that make good employees.

The trainees selected were given 3 to 6 weeks of training as weavers. When the first trainee finished his weaver's training, he was placed with a loomfixer instructor in a new weave room.

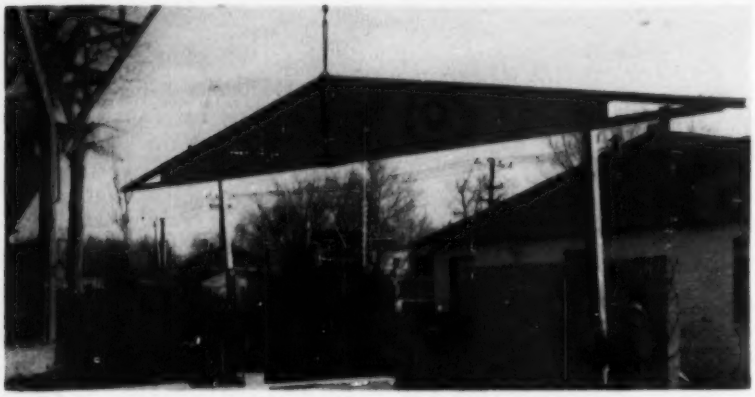
The trainee was given several days of individual instructions on seven major loom motions. After the trainee grasped the fundamental principles of each motion, he was given one loom with a warp in it and an empty loom to work on while the other loom was running.

Each afternoon after the trainees leave the job, the instructor puts the loom with cloth in it out of adjustment. A cloth defect will appear when the loom is started the next morning. This practice gives on-the-job training to the men because it simulates actual weave-room conditions.—Textile World, June, p100

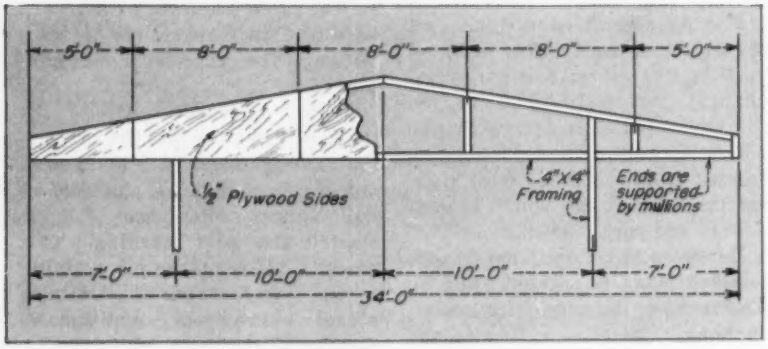
Free Reader Service

As a special service to our subscribers, the McGraw-Hill Digest will furnish without any charge additional information about any new business or technical development described. Address your letter to: The Editor, McGraw-Hill Digest, 330 West 42nd St., New York 36, N. Y., U. S. A.

WINDOW-AREA LENGTH in bedrooms shows flexibility of non-bearing walls. Many floor plans can be built without altering basic house shell.



FIRST OF SIX rigid cantilevered frames, complete with posts, is lifted into place. The six units finish structural framing for the entire house.



RIGID CANTILEVERED FRAME is the secret of architect Sayre's new construction method. Costs are substantially cut. Construction time is low.

New Design Technique

New concept cuts costs and speeds erection of small homes. The secret: skin-stressed cantilevered trusses and walls that carry only their own weight

SOMETHING NEW in house building has entered the small-homes construction field. It is a structure designed from the inside, outward to the perimeter walls, increasing the flexibility of the floor plan and reducing costs.

Denver architect, William B. Sayre, designed the house and has built the first pilot model. It has an area of 1,650 sq. ft.

Secret of the new development is the rigid cantilevered frame made up of 4 x 4-in. chords and ½-in. plywood sheets (see drawing). Posts can be set into the frames to permit large or small overhangs, as desired. Variable lateral positioning of posts allows greater flexibility of floor plans.

Stress of the rigid cantilevered frame is between plywood and nail. Certain compression stresses are in tension between the top and bottom chords. The chords also act as nailers. Staggered double rows of 8d nails on 2-in. centers make up the nailing pattern.

Six frames, 8½ ft. on centers, go into the complete framing of the house. All walls are non-bearing, including the exterior walls. This accounts for substantial savings. Non-bearing walls allow all trades to be on the job at the same time.

Block work was carried to a height of 6 ft. 8 in. to correspond to height of door and window frames. In the next house it will be increased to 7 ft. so a wiring trough can be installed around the perimeter of the building. Wiring in the pilot model was installed in the floor.

The block panels work out to 10 to 12 ft. in length with expansion joints between. Each third course has a ¼-in. rod. The rod and expansion joint minimize cracking. Blocks are lightweight with an insulating aggregate. The blocks received no other interior finish.

Heating combines a warm-air perimeter system and radiant heat in the slab. A long plenum runs the length of the house and has multiple clay ducts radiating from the plenum to the perimeter floor registers. Warm air is carried through ducts heating the floor.—Am Builder, July, p51

Uninvited Pests...
threaten every crop

Everything that grows around farms and gardens, from tender young plants to hardy shrubs and trees, is at the mercy of hordes of ravenous insects and pests. Only through frequent and thorough spray coverage of every leaf and stalk with pest-killing chemicals can these destructive "uninvited guests" be held in check. To assist farmers and gardeners in the never ending battle against nature's own worst enemies, FMC's John Bean Division provides scientifically designed pressure spraying equipment from small portable sprayers to huge, high capacity *Speed Sprayers* that produce penetrating clouds of protective mist. This is but another example of FMC's contributions to agriculture and industry. For full details write John Bean Export Dept., Lansing, Michigan, U.S.A.

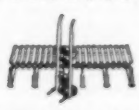
One of a wide variety of John Bean Sprayers, the portable Spartan power-sprayer is an effective applicator for gardens and small acreages.

John BEAN Trade Mark

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY AND CHEMICAL CORPORATION

EXECUTIVE OFFICES: SAN JOSE 6, CALIFORNIA, U.S.A.



FMC MATERIALS HANDLING EQUIPMENT

NIAGARA AGRICULTURAL CHEMICALS

WESTVACO INDUSTRIAL CHEMICALS

M-E ROTARY TILLER

BECCO PEROXYGEN CHEMICALS

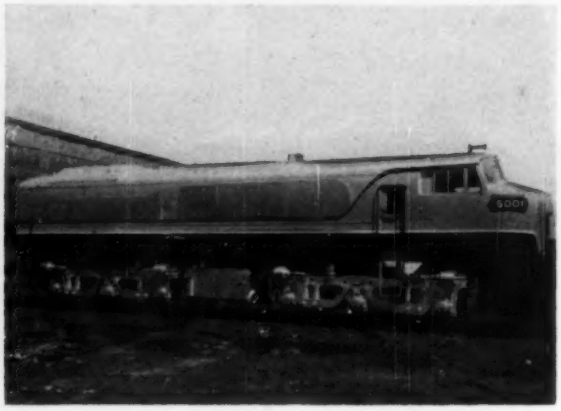
SHUR-RANE PORTABLE IRRIGATION SYSTEMS

REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Diesels for World Railroads

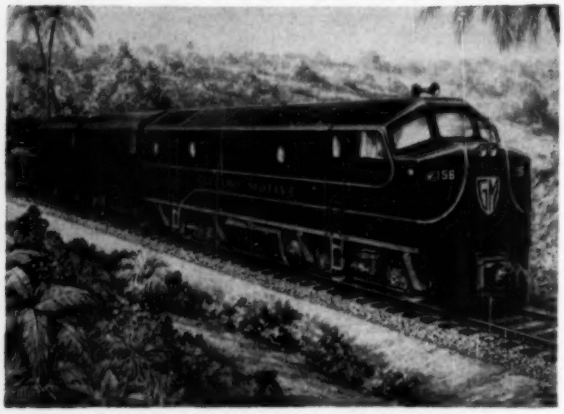
Story continues on next page

THE "WORLD", new export model made by American Locomotive Co.-General Electric Co., is high-speed 1,600-hp. freight-passenger engine.

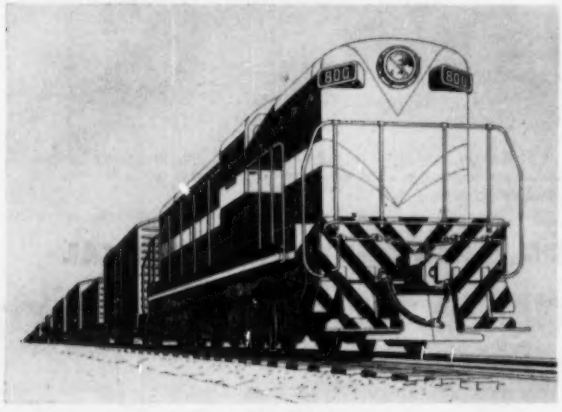


DESIGNED and made by Baldwin-Lima-Hamilton Corp.-Westinghouse Electric Co., this new 1,500-hp. streamlined model is on its way to Argentina.

VERSATILE standardized models made by Electromotive Div., General Motors Corp., are G-8, G-12 locomotives, powered by 750- or 1125-hp. engines.



STREAMLINED model B, also by Electromotive, has an 1,125-hp. engine. Prefabricated adjustable trucks are a feature of both G & B series.



OFFERED by Fairbanks-Morse are two brand new production model locomotives for export, a 660- and 800-hp. engine for all foreign-roads restrictions.

EFFICIENT 800-hp. engine is a 78-ton locomotive made by International General Electric Co. This one is for Cuba's Guantanamo y Occidente.

U. S. diesel makers are developing more special locomotives. — An original Digest article

SINCE THE END of World War II, U. S. railroads have been making a full-scale switch to diesel-electric locomotives to pull the heavier workloads of the biggest industrial boom in U. S. history. But now the railroads have just about reached total dieselization, and makers are looking overseas for new markets.

Some of them have been exporting for many years and have big plans that they are putting to work now that backlogs are dwindling. Among these are the manufacturers of the models on the previous page.

Alco-GE's new blue, red, and cream "World" locomotive is a mass-produced high-speed engine, a modified version of their standard 1,600-hp. passenger-freight engine. It can be adapted to almost any of the varying gages and clearances around the world, hence its name. Later Alco-GE will add an 800-hp. all-purpose, medium-speed locomotive to round out the "World" line.

General Motors, Electromotive Div., one of the first and biggest in the field, has been making several standardized models—G-8, G-12, and B. Parts—trucks, power plants—are interchangeable so axle load and horsepower can be varied by switching units. GM has been working hard in Asia, surveying and demonstrating diesels. They recently signed contracts to supply 40 of them to East Pakistan.

International GE, whose locomotives are partly made by American Locomotive Co., has been doing a fairly brisk business in Cuba and Latin America with workhorses like their 78-ton model. IGE makes engines for many gages.

Baldwin-Lima-Hamilton has teamed up with Westinghouse Electric Co. to make the General Roca, first of 51 engines going to Argentina. B-L-H has been in the locomotive export business since 1838 when Matthias Baldwin sent his first engine to Cuba.

Fairbanks-Morse has just come out with two models, 660 and 800 hp., in their bid for foreign-railway business. F-M says they are available in all gages, meter to broad gage, and can be suited to unusual conditions and restrictions of world roads. Biggest selling point in favor of diesels is their efficiency: operated under favorable conditions, they can save up to 75% over the conventional steam engine.

Metalworking Shorts

▶ **Close tolerances** could not be held by one company on magnesium parts although standard practices seemed to be followed. The trouble? Two things: (1) chilling drafts from open skylights and (2) too little cooling time on some parts that were machined last in the first operation, put on top the stack, and then machined first in the second operation.—Am Mach, June 22, p 161

▶ **Tinless cans** are made by American Can Co. for motor oil. The new steel can has its seam joined by thermoplastic cement rather than soldered with a tin-lead alloy. This permits all-around lithographing.—Am Mach, July 6, p169

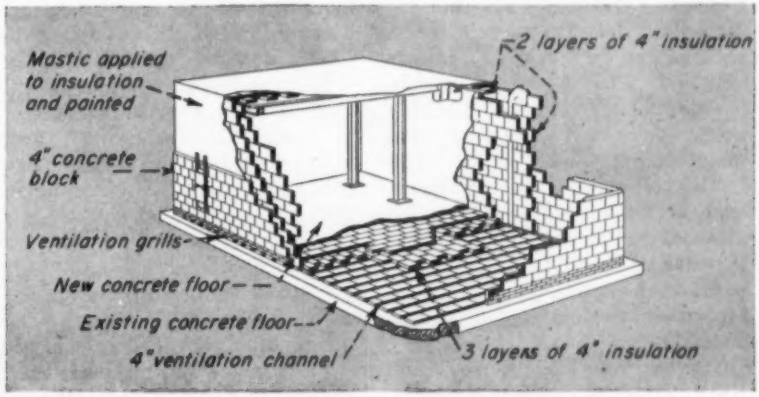
New Newsprint Process Uses Whole Bagasse

Late this year newsprint will be made entirely from sugar-cane bagasse in a Louisiana plant, owned by Valite Corp. The plant, with the capacity of 50 tons per day, will cost over $2½-million when finished.

Bagasse collected during the grinding season will be baled. Bales will be piled in checkered stacks to prevent combustion and control fermentation. Stacks will also be sprayed with boric acid.

Processing will begin with prehydrolysis in a rotary digester. Pretreated fibers will then be given an alkaline extraction under heat and pressure. Contents of the digester will be blown to a blowpit, washed, screened, bleached according to end use, and refined lightly before going to the paper machine. Stock refining in beaters or jordans must be light because of bagasse characteristics.

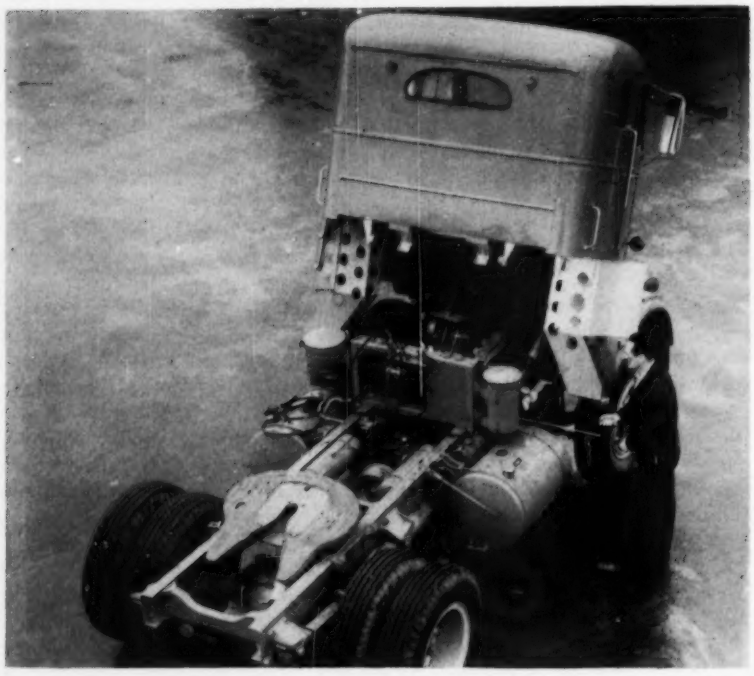
Bagasse paper can be made in thin sheets, which offers a distinct advantage in some applications. High-grade book papers, bond papers, grease-proof papers, tag board, and newsprint have all been made in pilot-plant production.—Chem Eng, July, p136



Columns Bear on Floor Insulation

An insulating block capable of sustaining column loads made possible the construction of a thermally isolated freezer room at the Luick Ice Co. plant in Milwaukee, Wis. The room was built on top of the existing floor inside the plant itself. This construction involved erecting the room around a number of columns. Insulated floor extends under new footings built for these columns to prevent a thermal short circuit in the freezer room. A cellular-glass insulation block (Foamglas, Pittsburgh Corning Corp.) supports the column load.—Eng News-Rec, July 9, p43

NEW PRODUCTS



Two New Mack Truck Tractors Have Full Tilt, 3-Man Cabs

Full-tilt, three-man cabs that tilt forward in less than 2 min. are a big feature in Mack Truck Co.'s new line. With the cab in forward position, the power plant is readily accessible for inspection and maintenance.

All sheet metal body components, such as fenders and skirting, are attached to the cab and move with it when tilted. The instrument panel is demountable to make instruments and connections easily accessible.

The two new models, H60T and H61T, have different power plants, otherwise they are similar. The H60T has a Mack Thermodyne gasoline engine, producing 170 hp. at 2,800 rpm. H61T has a 170-hp. Mack Thermodyne diesel engine. An air starter for quick starting in cold weather is available on this diesel. If more power is required, the H61T can be supplied with a Cummins NHB diesel, delivering 200 hp. at 2,100 rpm.

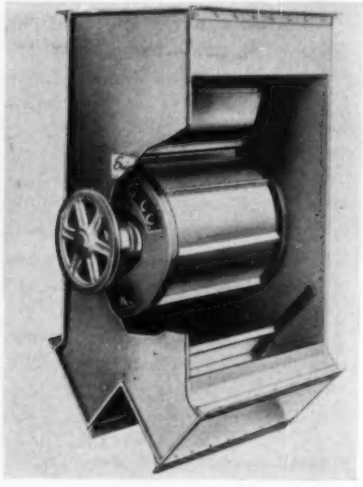
Front springs are flat semi-elliptical, pinned at the rear and floating in rubber at the front. Rear springs are of the variable rate type, with plain ends bearing on slipper cams at their outer ends. They are retained by sets of keeper bolts.

A single-leaf distance strut connects the axle with each forward spring bracket to act as a radius rod and give a full torsional cushioning effect. The slipper cams are so arranged that the effective length is shortened as the spring deflects.

Air brakes are standard equipment on both of the tilt-forward models.—**Mack Mfg. Corp., 350 Fifth Ave., New York, N. Y.**—Am Auto, June, p114

Stops Auto Roll-Back

Electric safety device, known as NoRol, automatically holds vehicles when stopped on hills or grades. When brake is applied, NoRol takes over and holds vehicle even though brake pedal is no longer depressed. NoRol releases itself when accelerator is touched, permitting a smooth start. Device fits all model cars with hydraulic brakes and a 6-volt system.—**Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 4, Mo.**—Auto Ind, June 1, p80



Magnetic-Drum Separators

Two redesigned models have revolving cylindrical shells within which permanent magnets are located. Material is fed into drum hopper where flow is regulated by a feeding device. As material reaches drum, magnetic field holds ferrous particles to the revolving shell.

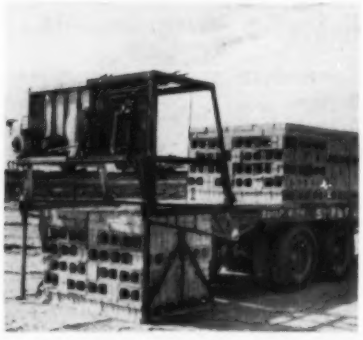
Model DF-101 can act as a feeding device as well as a separator because of fins on the drum surface. Model DF-102 has a smooth shell and is usually installed at the discharge end of a chute or conveyor.—**Eriez International Corp., Erie 2, Pa.**—Chem Eng, July, p212

Stainless-Steel Filter

Greater ductility, tensile strength of 25,000 lb. per sq. in., and extremely smooth surface are advantages claimed for grade X porous stainless-steel filter. Thicknesses available are 0.040 in. to ⅛ in. Mean pore opening is 10 microns.—**Micro Metallic Corp., 35 Sea Cliff Ave., Glen Cove, N. Y.**—Pet Proc, May, p769

Baffles Cut Noise

Sound-absorbing, noncombustible baffles for hanging where a conventional acoustical ceiling is impractical are now available. They are made of fine fibers of glass bonded with thermosetting binder to form rigid panels, 24 in. wide, 48 in. long, and 1½ in. thick. Baffle is enclosed in opaque film, hung by stainless-steel wire.—**Gwens-Corning Fiberglas Corp., Toledo 1, Ohio**—Elec West, May, p48



Unloads Concrete Blocks

Sixteen tons of concrete blocks—1,088 of them—can be unloaded in 20 min. with new block unloader. Steel tracks along the edge of the truck bed guide a self-propelled carriage to a position over the load. Triangular frames are lowered along the sides of the load, and pipes or bars are inserted in the holes of the blocks.

The load, raised free of the truck, is rolled back under power and deposited on the ground at the rear of the truck or on another truck. Power is supplied by a 7½-hp. air-cooled engine.—**Builders Equipment Co., 4012 N. Central Ave., Phoenix, Ariz.**—Eng News-Rec, June 4, p171

Blocking Oscillator

Packaged blocking oscillator is now available. It is a cased, plug-in unit that includes a transformer and other circuit components, with a socket for a miniature tube on top of the case. Small core loss due to ferrite cores in transformer permits use of high peak-operating currents.

High permeability permits required inductance with fewer turns, allowing faster pulse rise time. Types available are: PBO-1 for 0.1-sec. pulses with 0.01-sec. rise time; PBO-2 for 2.0-sec. pulses with 0.04-sec. rise time.—**American Machinery & Foundry Co., 479 Fifth Ave., New York 17, N. Y.**—Electronics, June, p322

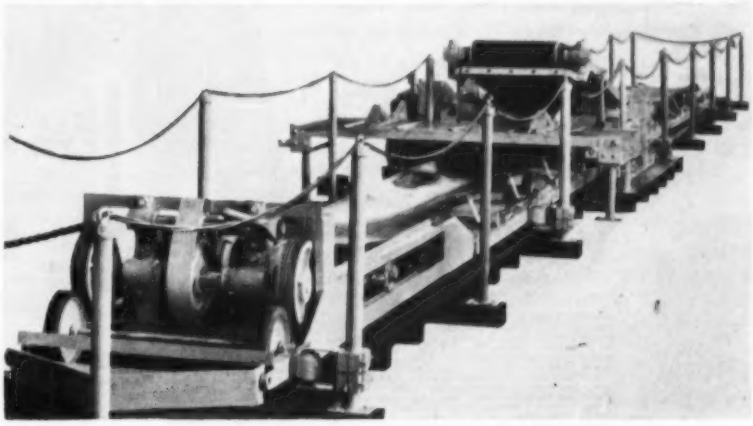
For Deep-Hole Drilling

Percussion drill designed for the special problems of deep-hole drilling permits a 4-ft. steel change in a 7-ft. drift. The new machine, Model SFH99, facilities the practice of horizontal or vertical ring drilling of long blast holes from a single setup by using a percussion drill and sectional rods.

The shank rod is locked in the chuck to prevent loss of the rod string in down holes. An extra-heavy centralizer supports the rod string during changes and thus simplifies up-hole drilling.—**Gardner-Denver Co., Quincy, Ill.**—Eng & Min J, July, p173

Radial Arm Saw

New model GA radial arm saw replaces previous model GR. Principal changes are a radial arm, 1½-in. longer, and a roller head carriage that now rides on eight bearings instead of four. Bearings are preloaded double-row type and each has a 11/16-in. surface contact with machined track. Four are set at a 90° vertical plane to absorb upward thrust and four at 45° for side thrust.—**DeWalt, Inc., Lancaster, Pa.**—Fleet Owner, June, p78



Conveyor Developed for Continuous Mining

New shuttle conveyor designed for continuous miners provides the "missing link" in continuous operation by filling the gap in the mechanized flow of material from the face to the surface. Extensible to 600 or 700 ft. by a rope haul, the new conveyor maintains a fixed discharge or transfer point while following mining to receive material directly from the mining machine or from an intermediate unit. Conveyor capacity is 250 tons per hr.—Hewett-Robbins, Inc., Stamford, Conn.—Coal Age, July, p114

Consult your local Underwood Dealer or write to us

UNDERWOOD CORPORATION, *International Division*

1 PARK AVENUE, NEW YORK 16, N. Y., U. S. A.

Sales and Service Throughout the World

VICTOR MOLYFLEX

hack saw blades

Now high speed steel blades can be used for *all* metal cutting jobs. Victor "Molyflex" Blades are shatterproof, so flexible they cannot be broken in use in a frame. Yet they cut just as well, last just as long as high speed steel blades.

VICTOR SAW WORKS, INC.

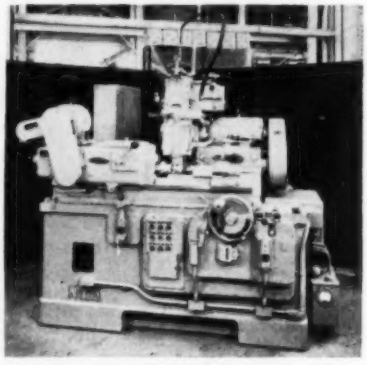
MIDDLETOWN, N. Y., U. S. A.

MAKERS OF HAND AND POWER HACK SAW BLADES, FRAMES AND BAND SAW BLADES

Australia; Walter A. Cox Pty. Ltd., Shorter House, 193-195 Clarence St., Sydney, N.S.W. • Argentina; Will L. Smith, S.A., 443 Luis Saenz Pena 451, Buenos Aires. • Belgium; Maison Mondiflet, Rue St. Jean, 13, Liege. • Brazil; Alfredo Kramer & Cia. Ltda., Caixa Postal 537, Rio de Janeiro; Alfredo Kramer & Cia. Ltda., Caixa Postal 2984, Sao Paulo. • Chile; Leopoldo Hochbaender, Castillo 438, Santiago de Chile. • China; Kano Import Corp., 10 E. 40th St., New York 16, N. Y. • Colombia; Hans Schultz, Apartado Aereo 802, Barranquilla. • Costa Rica; Arthur W. Gaugh, Apartado No. 133, San Jose. • Cuba; Cuban Air Products Corp., San Juan de Dios (Pregreso) #154, Havana. • Denmark; Chr. Schmidt & Co., Amagertorvet 24, Copenhagen. • Dominican Republic; Hector Lluberes, Arzobispo Nouel 74, Ciudad Trujillo. • Ecuador; Casa Barahona L., Casilla 173, Quito. • Egypt; Samuel E. Waicha, 22 Rue Midan, Alexandria. • Finland; O/Y Trade A/B, Telegatan 29B, Helsingfors. • France; Societe S.E.R.E.S., 148 Rue de Noisy-le-sec, Bagnolet (Seine). • Haiti, W. I.; Andre Camman, 241 Ave. Pdt. Trujillo 241, Port-au-Prince. • Holland; A. Holders & Zonen, Hoogstraat 339, Rotterdam. • India; Associated Imports & Exports Co., Ltd., P-6 Mission Row Extension, Calcutta; Associated Imports & Exports Co., Ltd., 35-36 People's Building, Sir Pherozeshah Mehta Road, Fort, Bombay. • Ireland; Hendron Bros. (Dublin) Ltd., 27/39 Up. Denmark St., Broadstone, Dublin. • Italy; Defrias & Co., Viale Monza 14, Milano. • Jamaica, B. W. I.; Abraham, Henriques & Jay, 25-27 Duke Street, Kingston. • Mexico, D. F.; Agencias Comerciales y Occidentales, S.A., Apartado 8600. • Norway; A. B. Laurantzon, Post Boks 3992, Oslo. • Transjordania; Iran; Iraq; Palestine; S. Bahmani, Bahmani's Bldg., Haifa. • Panama, R. de P.; Demetria Fernandez O., Apartado 574. • Peru; A. y F. Wiese, Edificio Wiese, Lima. • Philippines; Reliance Commercial Enterprises, Inc., 123 Juan Luna, Rm. 402—4th Floor, Manila. • Sweden; Slipmaterialaffaren, Malmo. • Switzerland; Armand Cohar & Co., 65 Tedistrasse, Zurich. • Syria & Lebanon; Societe Commerciale des Machines et Material Industriel, 94 Avenue Baron, Alaapo. • Turkey; Loan Barnardin Marzo, Posta Kutusu 88, Istanbul. • Uruguay; Will L. Smith, S.A.U., 1181 Uruguay 1183, Montevideo. • Venezuela; M. H. Mininno Beahr, Apartado 1293, Caracas. • New York; Will L. Smith, S.A., 50 Broadway, New York. • Portugal; Pierre Dumraz, Alexandre Braga, Porto. • Honduras; 81 Auto Schultz & Lezama, Tegucigalpa, D.C. • S. Africa; Belgian Congo; Spain; Porto Rico; Hawaii; Russia; Fraser & Co., 50 Church St., New York 7, New York.

Recorder Weighs 25 Lb.

This attractive portable recorder is housed in an aviation luggage carrying case and weighs slightly less than 25 lb. It measures only 14 in. x 12 in. x 9 in., has dual-speed, can record or play-back up to 2 hr. Reels can be rewound in 2¾ min. Fitted jack permits attachment to phonograph, radio or public address system. Built in amplifier has 4 tubes.—**RCA Victor Div., Radio Corp. of America, Camden, N. J.**—Elec Merch, July, p156

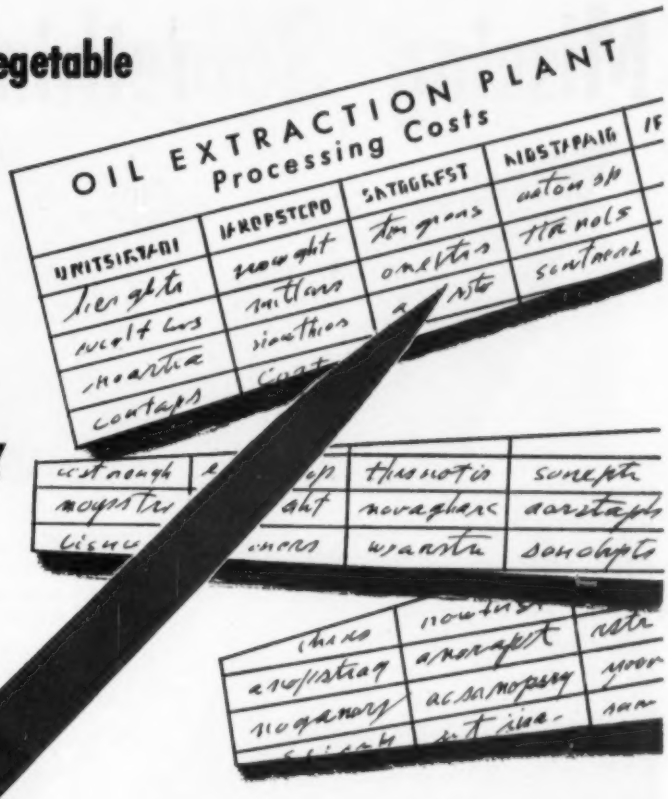


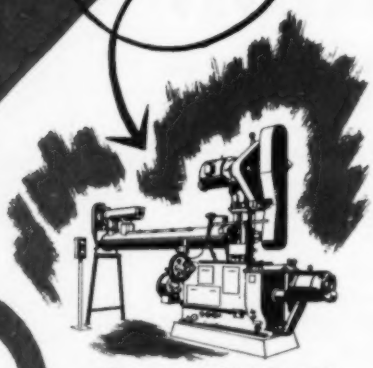
Semiautomatic Grinder

New 6 x 8-in. piston grinding machine grinds elliptical automotive and aircraft pistons to close tolerances and fine finish. It can grind complex skirts with varying relief from top to bottom.

Automatic grinding cycle is started by a single lever. Wheel is trued automatically by a wheel-guard-type truing device actuated by pushbutton. Accessory parts—pumps, motors, valves — are mounted in accessible locations.—**Norton Behr-Manning Overseas Inc., Worcester 6, Mass.**—Am Mach, June 22, p176

CUT Your Vegetable Oil Processing Costs With the NEW HEAVY DUTY HIGH CAPACITY EXPELLER*





Heavy Duty High Capacity Expeller

● As markets for vegetable oils become more competitive oil millers must find ways of reducing processing cost to maintain their profits. The new Heavy Duty High Capacity Expellers answer this need by lowering operational costs.

By use of these efficient machines reduction in the cost of processing oleagineous material is possible as they require substantially less labor, electricity, and steam per ton of material handled. And their first cost per ton of capacity handled is up to one-half lower than any other screw press equipment. As an example, in conjunction with the new Anderson Cooker-Dryer, one Heavy Duty High Capacity Expeller can process 26 tons of castor seed, 25 tons of flaxseed, 25 tons of ground nut kernel and 45 tons of cottonseed per 24 hour day with a residual oil in the cake between 4% and 5%.

Based on results like these over 40 oil millers have already adopted this process. You, too, should investigate the possibilities of lowering your costs. Write today for bulletins on the new Heavy Duty High Capacity Expeller process.

THE V. D. ANDERSON COMPANY
1945 West 96th Street • Cleveland 2, Ohio

ANDERSON

*Trademark Registered in U. S. Pat. Off. & Foreign Countries

World's Largest Supplier of Extraction Equipment

Missing Something?

*WATSON-STILLMAN 600 TON STRAIGHT-THROUGH WHEEL DEMOUNTING PRESS

★WATSON-STILLMAN 300 TON STRAIGHT-THROUGH WHEEL MOUNTING PRESS

W-S HYDRAULIC

ESTABLISHED 1848

YOUR FREIGHT CARS, PERHAPS?

Your freight and passenger cars roll *straight* into the shop for wheel-set maintenance repairs . . . roll *straight* out. But what goes on inside?

Do they follow a costly maze of in-plant handling . . . shunted from one remote operation to another, finally to emerge hours, or days, or even weeks behind schedule?

Or do they move *straight through* via Watson-Stillman production demounting and mounting equipment?

Your entire line of wheel maintenance equipment waits upon the speed with which wheels come off and go on again after re-conditioning. Don't cripple your maintenance operations with outmoded wheel-handling facilities . . . keep rolling stock rolling with W-S high-speed mounting and de-mounting presses.

Let us tell you about all the other Railway Equipment that is made by Watson-Stillman. Bulletins available . . . Free.

EXPORT DEPARTMENT

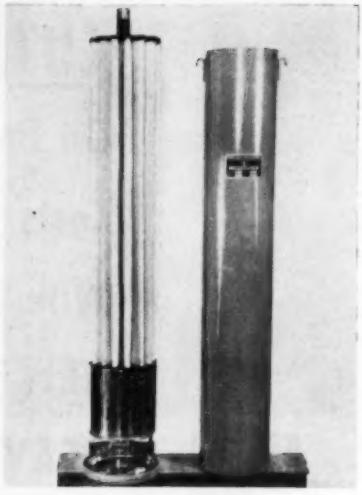
THE WATSON-STILLMAN COMPANY

DIVISION OF H. K. PORTER COMPANY, INC.

ROSELLE, NEW JERSEY

9-0-80

W-S MAKES MORE TYPES AND SIZES OF HYDRAULIC MACHINERY THAN ANY OTHER COMPANY



Filters Compressed Air

Model A-100-D Condensifilter has disposable filter cartridge providing over 24 sq. ft. of filtering area. Cartridge is made of wire mesh and flannel cloth; it can be replaced in a matter of minutes.

Condensing unit has area of more than 950 sq. in. Dewpoint of air is lowered to within 2 to 3° of the cooling-water temperature. Entrained or vaporized water and oil are removed by condensation; accumulated condensation is discharged through trap valve.—**Hankison Corp., 270 Biltmore Bldg., 951 Banksville Rd., Pittsburgh, Pa.**—Power, July, p194

Fire Fighter on Wheels

Dry chemical 150-lb. size extinguisher is portable, easy to operate, and compact. It manuevers easily indoors or out. It is effective on flammable liquids, gas and electrical fires as well as on surface fires involving ordinary combustible materials.—C-O-Two Fire Equipment Co., Newark 1, New Jersey —Nat Pet News, June 17, p73

NEW PRODUCT BRIEFS

Insect Screening—Mesh screening, woven from vinyl-coated Fiberglas yarns, is soft, easy to handle, and highly weather resistant. It is being offered to compete with aluminum, bronze and plastic screening. —**Owens-Corning Fiberglas Corp., 16 East 56th St., New York 22, N. Y.**—Chem Wk, July 11, p76

For Pipe-line Drilling—Maker claims its Twin-Boom Pipe-Line Drill represents the latest and most practical rock-drilling outfit available for pipe-lining trenching. Completely mechanized, the twin-drill air-feed assemblies and drifters are suspended from crawler tractor booms.—**Schramm, Inc., West Chester, Pa.**—Const Meth & Equip, July, p216

Stapling Tacker—Special tacker makes it possible to drive and clinch staples in hard-to-reach places where a blade cannot be inserted to clinch the staple. Device drives staples and turns legs outward to clinch under or inside the work.—**Bostitch, Inc., 1007 Mechanic St., Westerly, R. I.**—Am Builder, July, p126

Tell Color in 10 Seconds—Color meter with Electronic Galvonometer measures precise color difference in 10 to 20 sec. It is designed for use on paper, textiles, plastic, paint, varnish.—**Gardner Laboratories, Inc., Bethesda 14, Md.**—Mod Pkg, July, p140

Gasket Material — Asbestoprene, made of asbestos and neoprene rubber, makes a good gasket material. It combines compressibility with heat resistance and is said to be unaffected by oils, water, gasoline, and anti-freeze solutions —**E. I. du Pont de Nemours & Co., Wilmington, Delaware** — Fleet Owner, July, p185

UHF-VHF Line — All-channel UHF-VHF wire is easily terminated by a pen knife. Two high-strength conductors are enclosed and spaced by foamed polyethylene. Line resists internal moisture, weather, sunlight and abrasion—**Anaconda Wire & Cable Co., Hastings-on-Hudson, N. Y.**—Elec Whols, July, p9

World Famous For Precision and Flexibility

EX-CELL-O

PRECISION BORING MACHINES

Typical of the machine tools that have made the Ex-Cell-O name famous are its machines for precision boring, turning and facing. The Ex-Cell-O Style 1212-A Machine shown handles small and medium size parts and can be tooled for small or large volume work. One or more precision spindles can be arranged on each machine bridge. Controls of the hydraulically operated machine table are easily adjusted for an automatic cycle which may include rapid movement, two infinitely adjustable feed rates in both directions of travel, immediate or dwell reverse and stop.

This and many other Ex-Cell-O products are fully described in Catalog 27312. Use the coupon below to get your copy.

53-12

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN, U.S.A. • CABLE ADDRESS: XLO, DETROIT, U.S.A.

PRECISION MACHINE TOOLS • CUTTING TOOLS • MACHINES TO PACKAGE MILK IN SANITARY PAPER CONTAINERS

EX-CELL-O CORPORATION Detroit 32, Michigan, U.S.A.

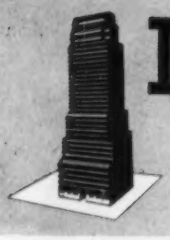
Please send without obligation copy of Ex-Cell-O General Catalog No. 27312.

Name_____

Company_____

Address_____

City and Country_____



McGraw Hill Books

for business and industry

Start a Business Library Today!

These books can help you cut maintenance costs, increase operating efficiency, and improve production.

1. **Black and Piccoli—SUCCESSFUL LABOR RELATIONS FOR SMALL BUSINESS, 425 pages, 1953 ..... $6.75**
   Written to present practical guidance in handling labor relations in small business or industry, this book shows the principles and techniques used to secure better contracts and to avoid or clear up labor disturbances.
2. **Grim — CLAY MINERALOGY, 384 pages, 1953 ..... $9.75**
   For geologists and mineralogists, this new book gives all available data on atomic structure, composition, physical characteristics, origin, and occurrence of the clay minerals. The fundamental nature of clays and soils is thoroughly investigated.
3. **Hadley Editorial Staff—PAYROLL RECORD KEEPING (Precision Air Parts Company Practice Set), 1953 Edition. Including Practice Assignments and Laboratory Material $1.50**
   This is a complete, up-to-date revision of a successful practice set which may be used with any text in courses on secretarial accounting or bookkeeping.
4. **Henrici—STANDARD COSTS FOR MANUFACTURING, 2/ed., 336 pages, 1953 ..... $6.25**
   This new book presents all data—benefits, types of expense recording, how standard-cost systems work, standardization of factory operations and the setting of standard costs for these operations, ways of using standard costs—necessary for installation and operation of standard-cost systems.
5. **Kristal and Annett—PUMPS, 2/ed., 373 pages, 1953 ..... $7.25**
   This book describes pump types and designs, and includes performance possibilities and service limitations. Modern methods of installing, operating, and maintaining pumps and remedying pump troubles are given. New pump types and designs available for standard and special applications are included.
6. **Loberg—MACHINE TOOL SELLING, 2/ed., 194 pages, 1953 ..... $5.75**
   This new book surveys the entire field of machine tool selling, and presents problems and proved sales-building methods that will improve techniques and increase sales.
7. **Shultz and Coleman—LABOR PROBLEMS: Cases and Readings, 456 pages, 1953 ... $5.00**
   This collection of case materials and supplementary readings covers unions, management, collective bargaining, and public policy. The treatment provides divergent points of view on major issues and familiarizes the reader with the actual situations which give rise to labor problems.
8. **Thompson—POPULATION PROBLEMS, 4/ed., 467 pages, 1953 ..... $7.25**
   This treatment provides an up-to-date, nontechnical discussion of matters of general interest relating to the growth and change of population. Emphasis is on the meaning of population changes and trends in population developments.
9. **Rosin and Eastman—THE ROAD TO ABUNDANCE, 167 pages, 1953 ..... $4.00**
   This provocative new book provides modern chemistry's answer to those who claim the earth's natural resources are being depleted too quickly. The authors demonstrate that chemical research and manufacture, properly encouraged, can assure a future of absolute abundance.
10. **Stoughton, Butts, and Bounds—ENGINEERING METALLURGY, 4/ed., 463 pages, 1953 $8.25**
    This treatment for non-metallurgical engineering students covers broadly the structure, properties, treatment, and working of metals and alloys, with emphasis on the use rather than the production of metals. The principles basic to the proper selection of metallic materials in engineering design and construction are presented.

These books may be ordered by using the coupon below, accompanied by full remittance in U. S. dollars. We will be glad to send you additional information on these and other McGraw-Hill books upon request.

clip here ----------

Book Department
McGRAW-HILL DIGEST
330 West 42nd Street
New York 36, N. Y., U. S. A.

Please send me the books corresponding to the numbers circled opposite, via registered book post. I understand that the prices quoted include postage and registration.

I am enclosing U. S. $.....

1. 2. 3. 4. 5.
6. 7. 8. 9. 10.

Name.....
Address.....
City.....
Country.....

To insure proper handling please type or print

D-9-53

MANAGEMENT REPORT

The weather's worth talking about. More and more U. S. companies are getting conscious of the effect the weather has on their operations. E. I. du Pont de Nemours & Co. kept careful watch of weather forecasts at its huge H-bomb plant construction job. Du Pont determined limits of the various elements within which different jobs could be performed. It then scheduled construction accordingly.

Recognizing the need for weather information, companies that supply long-range forecasts are going into business throughout the U. S. Their information can mean money to brewers, air-conditioning manufacturers, fuel-oil suppliers, soft drink and ice-cream makers. Nearly everybody has some stake in the weather.—Eng News-Rec, July 16, p35

Something different in fund-raising plans has been underway at Crouse-Hinds Co. This is the fifth year that more than 90% of all Crouse-Hinds workers have reported for work on a Saturday morning and have contributed the morning's earnings to the Good Neighbor Fund.

This year, the "Half Day's Labor Makes A Good Neighbor" plan earned approximately $25,000. The half-day's wages were distributed by the workers to various welfare agencies.—Am Business, June, p46

If you have trouble keeping supervisors and workers informed on company policy and latest news, here is an idea that has worked well for 6 years at Westinghouse Electric Corp.'s East Pittsburgh plant. Messages are recorded on tape and piped into the in-plant telephone system. The supervisor dials a special number to get the messages.

Messages are normally changed twice weekly. In an emergency, spot news can be recorded and fed into the system within an hour. Labor-relations topics draw the biggest flood of calls.—Iron Age, July 2, p71

U. S. tariffs on radio and television apparatus are lower than they have been in 25 years and are now lower than those of most nations. Tariffs have fallen sharply since 1930 when they hit a high of 35%. Now most TV and radio equipment is subject to 12.5% ad valorem tax set by U. S. Customs. This can be reckoned on production cost of the item, foreign value, or U. S. selling price, whichever is highest.

Further reduction may not be soon forthcoming. President Eisenhower has reportedly agreed to enlarge the U. S. Tariff Commission to get extension of the Reciprocal Trade Agreements Act. Some manufacturers see this as a victory for protectionists factions who will discourage tariff drops.—Electronics, July, p20

Watch out if you tend to like the "personality-boy" type of foreman who is a good backslapper and likes to talk. There is a good possibility that he will be a failure. That is the conclusion of Wisconsin University's Industrial Management Institute.

The institute reports that "a little introversion, an ability to think reflectively, is more important than a big dose of extroversion and hail-fellow-well-met attitude. The fellow who makes less noise and does more thinking is more apt to understand other people."—Factory, July, p134

A new organization set up in Australia, the Overseas Patent and Licensing Service, has these objectives:

- Encourage Australian industry to adopt more Australian patents held by overseas owners.
- Negotiate licenses under such patents.
- Collect royalties.
- Detect and prevent patent infringement.
- Provide "know-how" to help patents succeed

OPALS is a division of Electronics Industries Ltd. It does not confine itself to electronics, but covers every phase of industry.

Latent managerial skills, Dow Chemical Co. has found, can be developed by frequent, informal group meetings limited to one level of management at a time. Every month, five or six 3½-hr. sessions are held away from the plant. Guest speakers are invited to bring in new ideas.

Typical topics include: techniques for stimulating human effort, manpower utilization, communications, evaluation of executive-personnel organization, costs, departmental objectives. Results: better teamwork and understanding of one another's problems.—Chem Wk, July 11, p14

"Nothing down—and 10 yr. to pay." Those are the terms under which municipalities—from small towns to cities the size of Pittsburgh—may now buy new, completely installed street lighting systems. It is part of a plan created by Broadway Maintenance Corp. for municipalities desiring to acquire modern lighting systems on the installment plan. Other selling points: no extras, no labor problems, low lighting costs.

The company says the operating savings of its system will more than pay for the cost in the 10 yr. that the installments run.—Business Wk, July 11, p128

PRODUCTION IDEAS

from Manufacturers' Catalogs

Reclosers, Sectionalizers — Bulletins DB 36-685 and DB 38-690 describe reclosers and sectionalizers and their use on electrical lines.—Westinghouse Electric International Co., 40 Wall Street, New York 5, N. Y.

Hard Facing—Deloro Stellite, a nonferrous alloy of cobalt, chromium, and tungsten, is described in booklet B9E. —Deloro Smelting & Refining Co. Ltd., Deloro, Ontario, Canada.

Hydraulic Power Units—Styles 28-A, 21, and 20 Quill-Type hydraulic power units for use with high production machines are covered in bulletin 45828. —Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit 32, Mich.

Automatic Conveyors—Catalog 803 illustrates features and applications of Houdaille conveyors. It gives case histories of actual installations.—Honan-Crane Corp., Lebanon, Indiana.

Plastics—Bulletin describes the properties and applications of Insurok laminated and molded plastics.—The Richardson Co., 2751 Lake Street, Melrose Park, Ill.

Counting Scales—"Counting By Weight" explains the use of counting scales for quick, accurate inventory counting.—Toledo Scale Co., Toledo 1, Ohio.

Centrifugal Pumps—Frame-type centrifugal pumps to handle ordinary pumping jobs, requiring capacities up to 500 gpm. and heads to 135 ft., are described in bulletin 52B6691A.—Allis-Chalmers Mfg. Co., General Machinery Div., Export Dept., Milwaukee 1, Wis.

Fiber Identification—Calco Technical Bulletin 831 covers the identification of synthetic fibers by microscopical and dye staining techniques.—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.

Friction Clutches—Schematic drawings and dimensional tables of Beyl-friction clutches and clutch couplings are given in folder 2437.—Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

Diesel Engines—Folder E-96-B illustrates six diesel engines and power units ranging from 45 to 130 hp. It also describes features such as compression ignition, precision injection, controlled combustion, and efficient four-cycle design.—International Harvester Co., Harvester Bldg., Chicago, Ill.

Computing Billing Machines—Form TA1153 tells how Style M235 billing machine enables you to type, compute, and prove invoices in one simple operation.—Burroughs Adding Machine Co., 6071 Second St., Detroit 2, Mich.

Phosphoric Acid—Technical reprint "The Manufacture of Phosphoric Acid by the Wet Process" is reprinted from book "Phosphoric Acid. Phosphates and Phosphatic Fertilizers".—Dorr Co., Barry Place, Stamford, Conn.

Reflector Lamps—Folder gives data on many types of lamps used to light store-window displays.—Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

Portable Belt Conveyor—Applications and features of the Rapistan Stevedor, Jr. portable belt conveyor are described in bulletin SJA-53.—Rapids-Standard Co., Inc., 98 Rapistan Bldg., Grand Rapids 2, Mich.

Gas Engines—Bulletin 221 describes the design, construction, and operating features of FSE-9 and FSE-13 four-cycle, spark-fired gas engines.—Nordberg Mfg. Co., Milwaukee, Wis.

Printing Calculator—Booklet AC 639 Rev. 1 gives examples of how the printing calculator saves time in many business operations.—Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.

Cutting Tools—"How To Save Money" covers tools for drilling, counter-sinking, reaming, cutting, tapping, metal sawing, and drilling.—Gunther & Co., Voltastrasse 41, Frankfurt A/Main-West 13, Germany.

Steel—Technical Bulletin No. 3 deals with Senaca and Ultimo-6, the blended hot-work tool steels for majority of applications, and Spartan-5, Hodi, Red Indian, and Crodi for more specialized work.—Atlas Steels Ltd., Welland, Canada.

Marine Engines—Design features and specifications of air-cooled marine diesel engines are given in forms W0952-1E and W0152-1/1E.—Klockner-Humboldt-Deutz AG., Cologne, Germany.

Oil Booster—Engineering data on Peak-Temp Oil Booster are given in bulletin AD-108.—Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.

Glass for Stores—"How to Give Your Store the Look that Sells" illustrates the use of glass in stores, restaurants, etc. A.I.A. File No. 26-D describes Pittco Premier, a store-front metal. —Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh 19, Pa.

Resistance-welding Electrodes—Catalog 14.650-3 describes Weigor Weed's electrodes, holders, forgings, castings, alloy rod, and bar stock for resistance welding.—Fansteel Metallurgical Corp., 2200 Sheridan Road, North Chicago, Ill.

Transmission Systems—Pneumatic, magnetic, electric, electronic, and electronic-follower transmission systems for use in measurement and control of flow, pressure, liquid level, viscosity, and specific gravity are covered in catalog T-50.—Fischer & Porter Co., 7250 Jacksonville Rd., Hatboro, Pa.

Precision Shaper—Catalog 5209 gives features and specifications of 7-in. precision shaper.—South Bend Lathe Works, 425 E. Madison St., South Bend, Ind.

Recorder Controller—Circular Case Controller for automatically controlling temperature, pressure, liquid level, humidity, or other process variables is described in bulletin 465.—Foxboro Co., Foxboro, Mass.

Lumber-Mill Equipment—Bulletin GER-536 describes modern electric equipment for lumber industry from log pond to storage after milling.—International General Electric Co., 570 Lexington Ave., New York 22, N. Y.

Joints—Catalog 215 (Rev.) covers flexible ball joints. Catalog 300-B (Rev.) gives specifications of revolving joints.—Barco Mfg. Co., 1801 Winnemac Ave., Chicago 40, Ill.

Please write directly . . .

. . . to the manufacturers for the free literature announced on this page. Tell them definitely which catalog you want—specify the catalog number or its name when either one is given. And mention that you saw the offer in the McGraw-Hill Digest.

ASK FOR THIS!

Yours on request . . . a book packed with ideas, examples, and illustrations to help you operate your business more economically and efficiently. RAPISTAN'S complete catalog of materials handling equipment features actual installations of conveyor units, lines and systems in the plants of progressive companies throughout the American continents. The combined experience of hundreds of manufacturers, wholesalers, retailers, growers and shippers is incorporated in helpful suggestions for improved handling methods in *your* operation. The RAPISTAN catalogs offer invaluable aid to anyone concerned with faster, more efficient, more economical movement of goods.

If you want specific answers to your particular problems, tell us the exact nature of your operation. You will then receive actual field reports describing and illustrating conveyor installations which are solving similar problems . . . all at no obligation to you!

Write today to:

The RAPIDS-STANDARD CO., Inc.
99 Rapistan Bldg., Grand Rapids 2, Mich.

Rapistan®
BETTER CONVEYING EQUIPMENT

which **SOLID TIRE** for your product?

Monarch cushion tires of tough, wear-resisting stock have high capacity for absorbing shock and cushioning fragile loads over rough surfaces; excellent for high lift stability.

For applications requiring extra traction, this tire is the first in its field.

MONARCH makes the complete line of solid industrial tires

Monarch industrial tires are supplied on wheels by a majority of wheel and hand truck manufacturers.

Designed for low ton-mile cost, this tire is particularly efficient on high lifts where sway is a factor.

The groove tire, used primarily on large industrial trucks and trailers, rounds out the complete Monarch line of solid industrial tires.

When you need tire replacements, order Monarchs from your truck serviceman.

THE MONARCH RUBBER COMPANY
550 LINCOLN PARK · HARTVILLE, OHIO

SPECIALISTS IN INDUSTRIAL SOLID TIRES AND MOLDED MECHANICAL RUBBER GOODS

Do You Use the Departments?

By the "departments" in the Digest, we mean:

- Business Trends
- Washington Report
- This Month's How To . . .
- Technical Shorts
- New Products
- Management Report
- Production Ideas from Manufacturers' Catalogs.

As most of you are directly engaged in managing businesses, you should find Business Trends, Washington Report, and Management Report especially valuable.

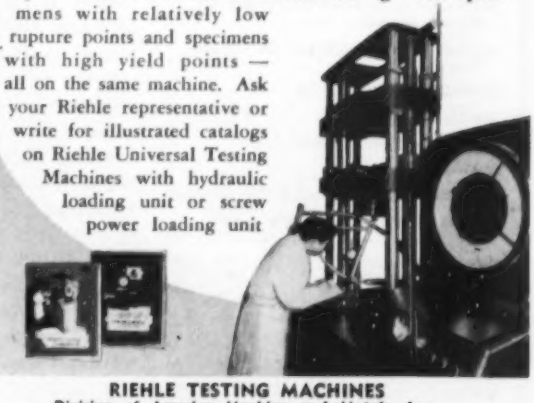
Business Trends points out the live, important issues particularly in the U. S. that can affect your business operations. In the same way, Washington Report briefs you on the actions of U. S. Government.

Management Report is a different breed, yet this too we have tried to slant directly to your needs. We have made it a broad, horizontal report on the best in management thinking, business-getting ideas, personal-business aids. If you would like to see any particular subjects covered in this monthly report, please write us.

FROM ORANGE CRATES TO ARMOR PLATES

you can test practically *anything* with a **RIEHLE** UNIVERSAL TESTING MACHINE

It's like having five testing machines in one, because the Riehle Pendomatic has 5 scale ranges to permit closer and more accurate reading. Test specimens with relatively low rupture points and specimens with high yield points — all on the same machine. Ask your Riehle representative or write for illustrated catalogs on Riehle Universal Testing Machines with hydraulic loading unit or screw power loading unit



RIEHLE TESTING MACHINES
Division of America Machine and Metals, Inc.,
Foreign Sales Dept., 233 Broadway, New York, U.S.A.

Here's Another Magazine We Digest

For Chemical Engineers

CHEMICAL ENGINEERING is the "know-how" magazine for chemical engineers in industry. With a paid circulation now close to 39,000, it leads all other monthly publications in an industry growing three times as fast as all American industry.

This magazine—now in its 51st year of publication—is rigidly edited for those people functioning as chemical engineers in technical management, production, design, development, maintenance, construction, cost control, and consulting. It has little interest in chemical theory or research unless they are directly related to practical plant operations or engineering.

Chemical Engineering's function is to supply broad, basic, yet practical and up-to-date information to chemical engineers throughout the chemical process industries: chemicals, petroleum refining, petrochemicals, resins and plastics, drugs and pharmaceuticals, pulp and paper, synthetic fibers, paints and pigments, fertilizers and agricultural chemicals, light metals, glass and ceramics, atomic energy, fats and oils, soap and detergents, synthetic rubber. It represents chemical-engineering practice in industry.

John R. Callaham
Editor, Chemical Engineering

Editorially, Chemical Engineering emphasizes what is new and what is useful in unit operations, processing equipment, unit processes, and basic materials. It gives special attention to the economic, or "cost", aspects of chemical engineering.

The magazine's staff consists of 14 editors, all of them chemical engineers and all with practical experience in the chemical process industries. These editors are supplemented by the large group of McGraw-Hill field reporters in the U.S. and throughout the world.

ADVERTISERS IN THIS ISSUE

ALLIS-CHALMERS MANUFACTURING CO., General Machinery Div.	26	HITACHI, LTD.	17
ALLIS-CHALMERS MANUFACTURING CO., Tractor Div.	1	HYDRAULIC PRESS MFG. CO.	2nd Cover
AMERICAN CYANAMID CO.	12	INTERNATIONAL HARVESTER EXPORT CO.	32
ANDERSON CO., V. D.	45	LINK-BELT CO.	2, 3
BETHLEHEM STEEL EXPORT CORP.	20	McGRAW-HILL DIGEST	48
BLAW-KNOX CO.	4	MONARCH RUBBER CO.	51
BURROUGHS ADDING MACHINE CO.	4th Cover	NORDBERG MANUFACTURING CO.	10
DELORO SMELTING & REFINING CO., LTD.	35	RAPIDS-STANDARD CO., INC.	51
DOMINION MAGNESIUM, LTD.	3rd Cover	REMINGTON RAND, INC.	24
DORR COMPANY	36	REPUBLIC STEEL CORP.	6
DOW CHEMICAL INT'L LTD.	8	RIEHLE TESTING MACHINES	51
EX-CELL-O CORPORATION	47	UNDERWOOD CORP.	44
FOOD MACHINERY & CHEMICAL CORP.	39	VICTOR SAW WORKS, INC.	44
GENERAL ANILINE & FILM CORP.	5	WALLACE & TIERNAN CO., INC.	28
		WATSON-STILLMAN CO.	46
		WESTINGHOUSE ELECTRIC INT'L CO.	11

Publications Digested:

McGraw-Hill Publishing Co., Inc.,
330 W. 42nd St., New York 36, N. Y.
American Machinist
Aviation Week
Bus Transportation
Business Week
Chemical Engineering
Chemical Week
Coal Age
Construction Methods & Equipment
Electrical Construction & Maintenance
Electrical Merchandising
Electrical West
Electrical Wholesaling
Electrical World
Electronics
Engineering & Mining Journal
E&MJ Metal & Mineral Markets
Engineering News-Record
Factory Management & Maintenance
Fleet Owner
Food Engineering
Industrial Distribution
Machinist (London Office)
National Petroleum News
Nucleonics
Petroleum Processing
Pharmacy International
Power
Product Engineering
Textile World
The American Automobile (Overseas Edition)
The Welding Engineer

Chilton Company,
Chestnut and 56th St., Philadelphia 39, Pa.
Automotive Industries
Boot & Shoe Recorder
Hardware Age
The Iron Age
The Optical Journal & Review of Optometry

Dartnell Publications, Inc.,
4660 Ravenswood Ave., Chicago 40, Ill.
American Business

Fritz Publications, Inc.,
431 S. Dearborn St., Chicago 5, Ill.
The Paper Industry

Industrial Publications, Inc.,
5 South Wabash Ave., Chicago 3, Ill.
Ceramic Industry

Modern Packaging Corp.,
575 Madison Ave., New York 22, N. Y.
Modern Packaging

Modern Plastics, Inc.,
575 Madison Ave., New York 22, N. Y.
Modern Plastics

Petroleum Publishing Co.,
211 S. Cheyenne Ave., Tulsa 1, Okla.
The Oil and Gas Journal

Simmons-Boardman Publishing Corp.,
30 Church St., New York 17, N. Y.
American Builder
Marine Engineering
Railway Age
Track and Structures
Locomotives and Cars
Railway Signaling & Communications

McGraw-Hill World News Bureaus: *London, Paris, Frankfurt, Tokyo, Bombay, Melbourne, Mexico City, Sao Paulo, Stockholm, Manila, Madrid, Tel Aviv, Rome, Ottawa, Belgrade, Tehran, Helsinki, Athens, Brussels, Copenhagen, Wellington, and 30 other industrial cities.*

DOMAL

high purity
(99.95%)

MAGNESIUM

AND MAGNESIUM ALLOYS

The highest purity magnesium in the world!

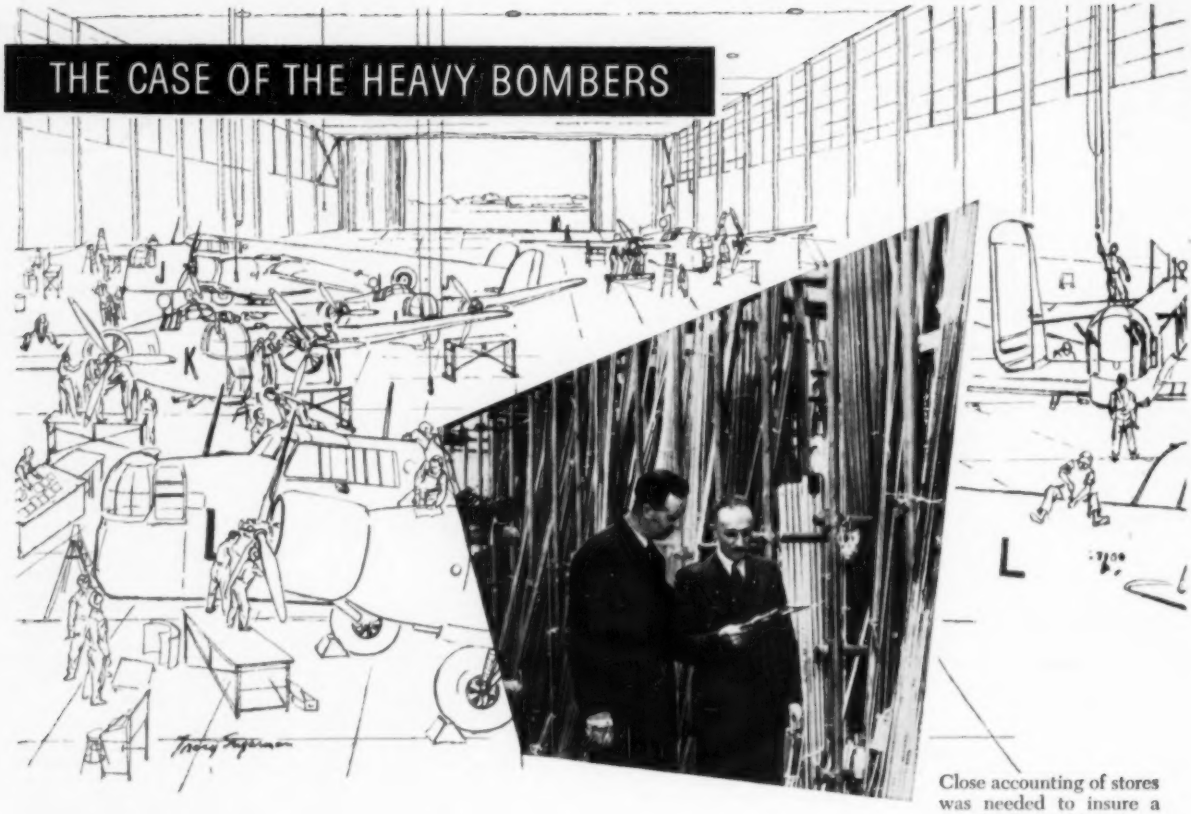
When you specify Domal Magnesium and magnesium alloys you can be sure of unsurpassed high purity—and of a dependable source of supply. Domal also produces high purity calcium and titanium.

A TYPICAL ANALYSIS OF DOMAL HIGH PURITY MAGNESIUM

ELEMENT	PER CENT
Aluminium	0.004
Nickel ..... less than	0.0005
Copper ..... less than	0.001
Iron	0.001
Silicon	0.006
Calcium	0.004
Lead	0.001
Zinc	0.001
Sodium ..... less than	0.001
Total Impurities ... less than	0.022
Magnesium (by difference)	99.978

DOMINION MAGNESIUM LIMITED

[illegible] ST. WEST — TORONTO, CANADA



Close accounting of stores was needed to insure a steady flow of bombers from the assembly line.

How small machines helped put them into the air!

● **Britain, World War II—heavy bombers needed fast . . . and in volume!**

Sir W. G. Armstrong Whitworth Aircraft Ltd., of Coventry was ready with a long line of heavy bombers—among them, the famous Whitley. Yet production of the Whitley was carried on from thirty-seven widely separated dispersal centers. Stores Accounting faced the problem of keeping simultaneous control of stock of all these centers.

Could pen and ink methods cope with as many as 250,000 stores transactions a month? Armstrong Whitworth thought not—sought advice of the machine accounting specialists of Burroughs Adding Machine Ltd.

They suggested installation of Burroughs Multiplying Accounting Machines. These, they said, could post and evaluate stock records *automatically* in one operation. This would give exact reconciliation between purchases, stores and cost accounts with less time and labor.

Result? With the new Burroughs machines installed, Armstrong Whitworth was able to obtain a *day-to-day record* not only of the value of total stock, but also of the quantity and value of each item of stock. Today, although new and faster aircraft are on the assembly lines, the firm's new battery of 20 Burroughs machines is *never* late with Stores accounts.

What about you? If you're looking for a faster, surer way to process paperwork in volume, call the Burroughs man. He's an expert on the subject, for he represents the world's broadest line of modern machines for business record-keeping: Adding, Calculating, Accounting, Billing and Statistical, Cash Registers.

Why not call today? There are Sales and Service Offices in principal cities around the world. Burroughs Adding Machine Company, Detroit 32, Michigan, U.S.A.

At work on the Stores Ledger of Sir W. G. Armstrong Whitworth Aircraft Ltd. is Miss K. Williamson. She is using one of the Burroughs Multiplying Accounting Machines that helped solve the Case of the Heavy Bombers.

FOR EXPERT ADVICE IN ANY FIELD OF BUSINESS FIGURES . . .

CALL THE Burroughs MAN